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BETA RAY BURNS OF HUMAN SKIN

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The development of the atomic energy program has resulted in a large increase in the number of persons exposed to radiologic hazards. With this increase it is essential that physicians and other scientists be acquainted with the dangers accompanying the handling of radioactive materials. Four cases of beta ray burns of the hands are reported here for the purpose of supplementing the present information in the existing literature,[1] and emphasizing the early clinical course, as well as the laboratory observations in such cases. It is hoped that, by calling attention to the early signs and symptoms of injury by beta radiation, overexposure will be recognized and hazardous operations discontinued before more damage is incurred.

All 4 men were injured while undertaking procedures of a like nature at the recent atomic tests at Eniwetok Atoll (United States Atomic Energy Commission's proving grounds). This work involved the handling of radioactive materials which emitted large amounts of beta and gamma radiation. A deviation in the prescribed procedure undertaken to expedite the operation resulted in the handling of these radioactive substances directly with rubber-gloved and sometimes with bare hands rather than with the remote handling devices that had been provided. Measurement of the dosage of beta rays received by the patients was not obtained at the time of exposure, but film badge and pocket ionization chambers worn by the men over the thoracic region showed readings for gamma rays varying from 1 to about 15 r. In view of the fact that the hands were much closer to the active material, it must be presumed that the amount of gamma radiation received by the hands was somewhat larger, probably by a factor of 10.

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From the Los Alamos Scientific Laboratory (Drs. Knowlton, Leifer, Hogness and Hempelman) and the Los Alamos Hospital (Drs. Blaney, Gill, Oakes and Shafer).

1. (a) Robbins, L. L.; Aub, J. C.; Cope, O.; Cogan, D. G.; Langohr, J. L.; Cloud, R. W., and Merrill, O. E.: Superficial Burns of Skin and Eyes from Scattered Cathode Rays, Radiology **46**: 1-23 (Jan.) 1946. (b) Raper, J. R.: Plutonium Project: Effects of Total Surface Beta Irradiation, ibid. **49**: 314-324 (Sept.) 1947. Low-Beer, B. V. A.: External Therapeutic Use of Radioactive Phosphorus: I. Erythema Studies, ibid. **47**: 213-222 (Sept.) 1946. Wilhelmy, E.: Ueber die Reaktion der Haut auf langwierige Röntgenstrahlen und Kathodenstrahlen, Strahlentherapie **55**: 498-523, 1936.

The major portion of the radiation consisted of beta rays with an average maximum energy of about 1 Mev. (million electron-volts). The ratio of beta counts to gamma counts in a glass-walled Geiger-Mueller type tube was about 6 to 1. The physical properties of beta rays of 1 Mev. maximum energy are such that approximately 90 per cent of the incident rays are absorbed by the first 3 mm. of tissue and 99 per cent are absorbed in 6 mm. of tissue.[2] Estimates of dosage indicated that these 4 men received from 3,000 to 16,000 rep (roentgen equivalent physical) to the outer surface of the skin.[3] The beta ray dosages below the surface of the skin would then be 300 to 1,600 rep at 3 mm. and 30 to 160 rep at a depth of 6 mm. In view of the fact that there was definite evidence that the whole body exposure did not exceed 15 r of gamma rays in any case, it was believed that there was minimal, if any, danger of important whole body effect, and the patients were treated primarily for local beta ray burns of the hands. This assumption was borne out in the course of the disease, in that at no time was there any significant evidence of other than local damage.

Since the amounts of radiation received and the clinical courses of the patients differ to some extent, each case is reported separately. Following is a brief synopsis of the clinical course of each patient. Prior to this episode these men had worked with radioactive materials but had had no overexposure to radiation and were all in good health.

REPORT OF CASES

CASE 1.—A white man aged 26 received 10 r of gamma rays to his whole body and about 5,000 to 10,000 rep of beta rays to his hands over a period of about sixty minutes. At the time of exposure he noted a tingling and itching of his palms, which he assumed to be due to excessive perspiration. Approximately two hours later he noted a stiffness of the fingers and a slight swelling of the hands. He reported to a physician thirty-four hours after exposure.[4] At this time there was slight swelling, erythema and tenderness of the second and third fingers of the right hand. On the left hand the volar aspect of all digits and the distal portion of the palm showed mild erythema and swelling. There was a blanched area over the proximal phalanx of the second finger of the left hand.

During the next twenty-four hours there was a definite decrease in the erythema and swelling of both hands. Beginning vesiculation was noted in the blanched area of the index finger of the left hand, and three days after exposure a definite vesicle with a surrounding area of erythema had formed.

On the fourth day the center of this vesicle was blackish blue. There was erythema of the volar surface of the second, third and fourth fingers of the left hand and slight swelling

2. Lapp, R. E., and Andrews, H. L.: Nuclear Radiation Physics, New York, Prentice-Hall, Inc., 1948, p. 178.

3. Joseph G. Hoffman of the Roswell Park Memorial Hospital, Buffalo, made the dosage calculations.

4. In cases 1, 2 and 3 the patients left Eniwetok immediately after exposure and were flown directly to Los Alamos, where they were seen by physicians on arrival. In case 4 the patient was not known to have been injured until the development of symptoms.

without erythema of the index finger and thumb of the right hand.

On the seventh day there were blanched and tender areas along the thenar aspect of the index finger and on the pad of the distal phalanx of the thumb of the right hand. By the eighth day these areas had become vesicular. From the eighth to the twenty-fifth day there was a continuous extension of

Fig. 1 (case 1).—Eleven days after exposure early vesicles were visible on the second fingers of both hands. (This photograph and those in subsequent figures were prepared by Elmer Donor of the Los Alamos Scientific Laboratory.)

the erythema of both hands, with vesicles forming two to three days after the onset of the reddening (figs. 1 and 2). By the twenty-fifth day, the erythema had disappeared and bulla formation had reached its maximum. At this time there was one large confluent bulla covering all four fingers and the distal portion of the palm of the left hand; a comparable bulla covered the right hand, including the fingers and palm.

Since the twenty-fifth day after exposure the clinical course has been one of constant slow improvement. By the twenty-eighth day drying of the bullae of both hands was noticeable, and on the thirty-second day most of these areas were dry.

On the thirty-ninth day the hands were surgically débrided with the patient under general anesthesia. At this time there was epithelization of both hands except in one area over the proximal phalanx of the second finger of the left hand, which appeared white and necrotic, and other smaller areas over the second, third and fourth fingers of both hands.

A second débridement was done on the fifty-third day, and at this time the only unepithelized areas present were over the second and third fingers of the left hand and a small area over the proximal phalanx of the second finger of the right hand. Further surgical débridements were carried out on the sixty-seventh and eighty-second days (fig. 3). Unhealed areas remained on the second and third fingers of the left hand and on the proximal phalanx of the second finger of the right hand.

Five months after exposure these lesions were still unhealed (fig. 4). The dimensions of all three lesions were about 1 by 2 cm., and there were white necrotic granulations in the center of each which bled easily on slightest trauma. The areas were surrounded by invaginating folds of thin, pink epithelium. There was minimal healing during the third, fourth and fifth months of the disease. Skin grafting of these lesions was performed during the seventh month with good results.[5] Skin grafting has also been carried out in an effort to replace the decidedly atrophic epithelium present in other injured areas, and further operative measures of this nature are anticipated. At the end of one year severe atrophy of the soft tissues underlying the sites of injury remains. There is moderate ankylosis of the phalangeal joints of the three most severely involved fingers.

Case 2.—A white man aged 27 received about 15 r of gamma rays to his thoracic region and an estimated 8,000 to 16,000 rep of beta rays to his hands over a sixty minute period. During this exposure he experienced a sensation of itchiness in both hands. Four hours later he noted a swelling of his left hand. He reported to physicians thirty-four hours after exposure, and at this time all the digits of the left hand were swollen and erythematous, the second and third fingers being most severely involved. There were no blanched areas on the left hand, and the right hand appeared perfectly normal.

During the third and fourth days, there was a definite decrease in erythema of the left hand and there were no symptoms referable to the right. From the seventh to the eleventh day erythema and tenderness developed over all four fingers and the distal portion of the palm of the left hand, and on the eleventh day tenderness and erythema was noted on the right index finger.

On the twelfth day vesicles began to develop in the erythematous areas. Up to the twenty-eighth day there was spreading of the erythema, with bullae eventually forming in all such

Fig. 2 (case 1).—Eighteen days after exposure there were large, tense, confluent bullae which followed the secondary erythema.

areas. By the twenty-eighth day the bullae covered the volar surfaces of all the fingers and the distal portions of the palms of both hands.

At about this time the erythema subsided. The bullae dried up by the thirty-fifth day (fig. 5), and part of the dead epidermis sloughed spontaneously. Surgical débridement on the thirty-ninth day disclosed a layer of thin epithelium covering most

5. The plastic surgery was performed on this patient and other patients by Dr. J. Barrett Brown of Barnes Hospital, St. Louis.

of the burned areas (fig. 6). When a second débridement was performed, on the fifty-third day, a small unhealed area remained on the second finger of the right hand and on the second and third fingers of the left hand. On the sixty-seventh day a third débridement was performed, and at this time both hands were entirely epithelized. The new epithelium was thin and had a tight, shiny appearance, as can be seen from figure 7.

Fig. 3 (case 1).—Eighty-two days after exposure there was an ulcer over the first phalanx of the second finger with a covering of slightly vascular, fibrotic granulation tissue. Superficial desquamation was also evident over the other fingers and palm.

Five months after exposure, there was a secondary breakdown of the epidermis over the most heavily exposed areas with cracking and drainage of serous fluid. Skin grafting of the palmar surfaces of both second fingers was performed during the sixth month with good results. By the twelfth month skin had been grafted onto the volar aspects of all fingers and the distal half of the palm of the left hand to replace injured, atrophic epithelium. By this time there was some loss of mobility of the digits of the left hand (despite efforts of active and passive manipulation during the course of disease) and considerable loss of underlying soft tissue.

CASE 3.—A white man aged 26 received 4.5 r of gamma rays to his whole body and about 5,000 to 10,000 rep of beta rays to the left hand in about a forty minute period. He first noted symptoms of swelling and stiffening of his left hand about six hours later. When he was examined forty hours after exposure there was a mild erythema and edema of the left hand. The right hand was free of signs and symptoms and remained so during the entire course of the disease. The generalized erythema and edema of the left hand decreased up to about the third day, at which time a secondary erythema appeared over the volar aspect of the index finger.

On the fourth day there were circumscribed dark red areas over the volar aspect of each phalanx of the index finger and the middle and distal phalanges of the third finger. From the seventh to the fourteenth day these five areas acquired a dark bluish color and became vesicular in character. By the fifteenth day these vesicles began to coalesce, and a new vesicle appeared on the proximal phalanx of the third finger. At this time the fourth and fifth fingers had become erythematous. On the seventeenth day erythema was noted over the distal heads of the second and third metacarpals. By the twenty-eighth day a confluent bulla including all four fingers and the heads of the second and third metacarpals was present. The entire reaction reached a maximum on the thirty-second day, at which time all erythematous areas, including one on the lateral margin of the distal phalanx of the thumb, had become bullous. On the thirty-fifth day the bullae had begun to dry and desquamate.

Surgical débridement was performed on the thirty-ninth, fifty-third and sixty-seventh days (fig. 8) with the patient under general anesthesia, and at each operation further healing was observed. On the sixty-seventh day whitish necrotic areas over the second and third fingers corresponding to the location of the initial bluish vesicles seen on the fourth day remained.

One hundred and sixteen days after exposure tendons were visible in both of the ulcerated areas (fig. 9). The tendon visible in the lesion on the second finger appeared to be partially necrotic. There was little, if any, healing of the lesions during the third and fourth months of the disease. By the fifth month there was definite improvement of the lesions (fig. 10), but from a functional point of view the second and third fingers of the left hand showed only slight joint mobility. During the next seven months skin was grafted first over the unhealed areas on the second and third fingers and later over the volar aspects of the remaining fingers of the injured hand to provide a more functional epithelium. Despite efforts of active and passive manipulation throughout the course of the disease, the phalangeal joints of the index finger are immobile and there is moderate limitation of flexion of the third finger. The soft tissue of both of these fingers is decidedly atrophic.

CASE 4.—A white man aged 27 received about 1 r of gamma rays to his whole body and an estimated 3,000 to 4,000 rep of beta rays to his left hand in about a sixty minute period. This patient's exposure occurred approximately two weeks prior

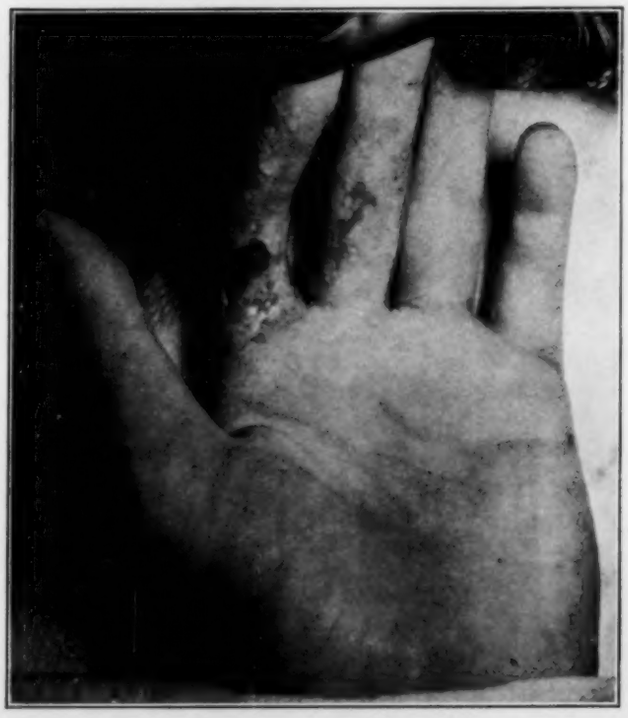

Fig. 4 (case 1).—One hundred and fifty-eight days after exposure there was still an unhealed ulcerated area over the first phalanx of the second finger with atrophy and flexor contraction of the digit.

to that of the other 3 men. He had no symptoms until eleven days after exposure, at which time he noted redness and swelling of the skin over the volar aspect of the proximal phalanges of the second, third and fourth fingers of the left hand. The patient reported to a physician on the thirteenth day, at which time there was a bluish discoloration beneath the skin in the

aforementioned areas but no vesicle formation. This was not recognized as a radiation injury at this time, because the patient gave a history of carrying an exceedingly heavy lead container with his left hand by means of an iron cross bar. Mechanical injury was thought to be the etiologic factor. By the fifteenth day, however, vesicles had developed in all of the erythematous areas and it became apparent from the course

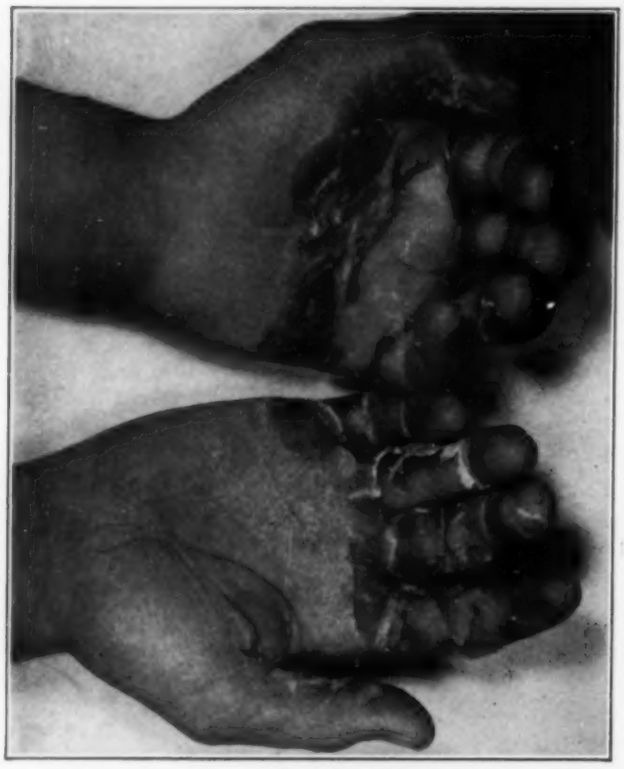

Fig. 5 (case 2).—Thirty-five days after exposure there was much spontaneous desquamation over the burned areas with a tanned appearance of the proximal portions of the palms.

that this was a radiation injury. The erythema had spread to the middle phalanges of the second and third fingers, and there was a bluish discoloration over the head of the second metacarpal. On the nineteenth day vesicles had formed over the middle phalanges of the second and third fingers.

By the twenty-fifth day the process had ceased to advance and bullae covered the volar surfaces of all the fingers and the head of the second metacarpal. From this time on drying progressed rapidly, and by the thirty-second day the bullae were completely dry. There was desquamation of the burned surfaces by the forty-seventh day, with epithelization over all these areas. This patient has had no signs of residual damage or tissue breakdown over a period of one year except for a slight reddening of the palmar surface of the hand. There were no signs or symptoms referable to the right hand during the course of the disease.

GENERAL CLINICAL OBSERVATIONS

The clinical course of these 4 patients may be divided into four distinct phases, comparable to those described by Robbins and others [18] and corresponding to the time intervals described by Borak [6] for effects of roentgen rays. Phase 1 consists of the initial erythema and edema with blanching of areas which received the greatest amounts of exposure. This phase begins with the initial exposure, reaches a peak in about forty-eight hours and then subsides rapidly. There follows a period of relative absence of signs and symptoms for three to five days (phase 2: third day to sixth or eighth day), at the end of which time phase 3 begins. This phase is first manifested by the development of a secondary erythema which in some cases is complicated by extravasation of blood into the erythematous areas. These reddened areas become vesicular eight to twelve days after exposure. There follows a period of about two weeks during which the erythema spreads and vesicles and bullae are formed. At the end of this time (twenty-four to thirty-two days after exposure) the active disease process becomes arrested and the bullae begin to dry and desquamate. During the last part of phase 3 epithelization occurs over all areas where the vascular supply has not been seriously damaged. Phase 4 is the chronic stage of the disease. Those areas of skin in which there has been serious interference with the vascular supply remain unhealed. In these cases skin grafting was undertaken when it became evident that epithelization would be incomplete. An atrophic epidermis, which is probably permanent in nature and in which secondary epithelial structures (such as hair and sebaceous glands) are absent, is present in the less seriously damaged areas. Secondary ulcerations such as were present in these cases, as well as the hyperkeratoses, telangiectases and malignant degenerations [7] which may occur many years after exposure, are included in phase 4.

Fig. 6 (case 2).—Thirty-nine days after exposure exceedingly thin epithelium was found beneath the thick, dead skin which had been removed surgically. These areas were extremely pain sensitive.

The two men who probably received the largest amounts of radiation apparently noted a sensation of tingling and itching of the hands at the time of exposure. This suggests that intense beta radiation produces a sensory perception.

6. Borak, J.: Radiation Effects on Blood Vessels: (*a*) Erythema; Edema, Radiology **38**: 481-492 (April) 1942; (*b*) Inflammation; Degeneration; Suppression of Growth Capacity; Retrogression; Necrosis, ibid. **38**: 607-617 (May) 1942; (*c*) Telangiectasis; Effects on Lymph Vessels; ibid. **38**: 718-727 (June) 1942.

7. Henshaw, P. S.; Snider, R. S., and Riley, E. F.: Aberrant Tissue Development in Rats Exposed to Beta Rays: The Late Effects of P^{32} Beta Rays, Radiology **52**: 401-415 (March) 1949.

The initial erythema and edema seen in these patients in the first forty-eight hours may be due to a local release of histamine in the skin with a resulting dilatation and increased permeability of the superficial capillaries.[6] In the more heavily exposed areas there was a definite blanching, which may have been caused by direct damage to the capillaries, resulting in a vasoconstriction phenomenon or to thromboses with occlusion of the vessels. The secondary erythema which occurred after five to seven days may have been a vascular reaction to cells which were continuing to die over a period of several weeks. It has long been recognized that many cells which have been injured by radiation can survive for a considerable period of time, but when they attempt to divide at a later date are unable to do so and die.[8]

Fig. 7 (case 2).—Eighty-two days after exposure there had been complete epithelization of both hands, but the shiny, atrophic epidermis was evident especially over both index fingers. A secondary breakdown occurred in these areas at about the one hundred and sixtieth day.

The bluish discoloration of some of the erythematous areas was the result of extravasation of blood from the injured dermal plexus of capillaries. In the early stage these lesions appear indistinguishable from ordinary "blood blisters" and bruises. These hemorrhagic areas in all cases showed poor healing and in some cases nonhealing, probably as a result of the severe damage to the capillaries which must, in the process of repair, nourish the healing epidermis.

All areas of the skin which were involved in the secondary erythematous process developed vesicles. These were usually initially discrete and subsequently coalesced with the formation of large bullae, which in some cases were continuous over all five digits and most of the palm. The bullae were tense and frequently caused sufficient pain, despite generous sedation of the patient, to justify repeated drainage. Aerobic and anaerobic cultures of the vesicle fluid were negative except on one occasion, in 1 case, in which Staphylococcus albus was found, presumably a contaminant. Thus, the course was not complicated by secondary infection. The development of a cellulitis resistant to chemotherapy would have been seriously detrimental to the injured tissue. The vesicles began to dry at the end of phase 3 and were either spontaneously desquamated or removed by surgical débridement.

The new epithelium which was formed over the involved areas was in general thin and shiny, except in case 4, in which there appears to be complete healing. A blotchiness of the underlying vascular tissue, which probably represents minor vascular damage, was noted in this case.

The effects on certain secondary skin structures in these patients were definite. Nail growth was retarded in all cases to about one half the normal rate (we served as controls), and there was a slight transverse depression in the nail which was formed at the time of exposure. There was a definite loss of hair from the backs of the fingers in case 2, but this was not noted in the other 3 cases. The dorsal surfaces of the fingers in cases 1, 2 and 3 showed an apparently permanent increase in pigmentation. During the first few days after exposure, there was an excessive amount of sweating of the palms, but after about a week there was a noticeable lack of perspiration which persisted for many weeks.

Fig. 8 (case 3).—Sixty-seven days after exposure there were deep ulcers similar to that in figure 3 and superficial desquamation of the palmar and digital surfaces.

There were definite changes in the capillary loops of the nail beds.[9] In the first five days an abnormal amount of dilatation and constriction of the loops was apparent. An increased tortuosity and in some capil-

8. Lasnitzki, I.: Effect of X-Rays on Cells Cultivated In Vitro: Recovery Factor, Brit. J. Radiol. **16**: 61-67 (Feb.) 1943; Response of Cells In Vitro to Variations in X-Ray Dosage, ibid. **16**: 137-141 (May) 1943.

9. Todd, J. C., and Sanford, A. H.: Clinical Diagnosis by Laboratory Methods, Philadelphia, W. B. Saunders Company, 1943, pp. 653-654.

laries actual thrombosis with interruption of blood flow was observed. By ten to fifteen days there was a definite decrease in the number of capillary loops, and during the third and fourth weeks some of the remaining loops had formed collateral loops into the area of destroyed capillaries. At the end of four months, a decreased

Fig. 9 (case 3).—One hundred and sixteen days after exposure a close-up view showed the extent of the ulcers during the fourth month. Small hemorrhages could be seen in the fibrotic granulation tissue, and a shiny tendon surface was present in the lesion over the first phalangeal joint of the index finger.

number of capillaries remained and the collateral loops were apparent and functioning.

The erythema and vascular lesions were confined, for the most part, to the volar surfaces of the hands. The dorsal surfaces exhibited minor desquamation indicating significant irradiation of these areas, but there was a sharp line of delineation between the volar and dorsal surfaces. Another important feature of this series was the lack of damage to the right hands in cases 3 and 4 and the lesser reaction seen in right hands in cases 1 and 2. This can be explained by the nature of the operation, which involved more contact of the radioactive material with the left hand.

Although the temperature, pulse and respiration charts are not shown, there were slight elevations of temperature and pulse corresponding in time to the development of vesicles and bullae. The respiratory rate and blood pressure remained in the normal range throughout the illness.

LABORATORY DATA

The laboratory examinations in these cases showed significant changes in the total white blood cell counts, the absolute neutrophil counts, the refractive granules in the cytoplasm of the lymphocytes [10] and the sedimentation rate. The total white blood count is the average of counts obtained from both chambers of a hemocytometer. The differential count, used for the calculation of the absolute neutrophil and lymphocyte figures, was made in wet films stained supravitally with neutral red and Janus green. Two hundred cells were examined for each differential count, one hundred by each of two technicians.[11] To determine any quantitative change in the number of refractive granules in the lymphocytes, one hundred lymphocytes were examined, fifty by each of two technicians, and the average values used. The same technicians made all the differential counts and lymphocyte studies and, although there was constantly a slightly larger number of granules counted by one of the technicians, this possible source of error is constant throughout the data. The hemoglobin values were obtained from a standard Evelyn photometric hemoglobinometer. The percentage of reticulocytes and the platelet counts were determined in a wet preparation stained with brilliant cresyl blue, and at least 1,000 erythrocytes were counted. The sedimentation rates were obtained using a standard Wintrobe tube.

The total white blood count, absolute neutrophil and lymphocyte counts, sedimentation rate and lymphocytic granules are graphically presented for case 1 in figures 11 and 12. The hematologic responses of the other

Fig. 10 (case 3).—One hundred and sixty-five days after exposure the tendon surface was still visible through a thin layer of fibrous tissue.

3 patients are not shown but were similar to that seen in case 1. The preexposure blood data as plotted are taken from approximately one year of routine blood studies and are plotted without reference to the time interval between counts. The refractive granules in the lymphocytes are plotted by two methods. The percentage of lymphocytes with six or more granules

10. Dickie, A., and Hempelmann, L. H.: Morphologic Changes in the Lymphocytes of Persons Exposed to Ionizing Radiations, J. Lab. & Clin. Med. **32**: 1045-1059 (Sept.) 1947.

11. Technical assistance was given by Dorothy E. Poskonski and Ann C. Jarman.

is used, since control counts on this patient had been obtained by this method previous to exposure and also because the cases reported in the literature previously had been studied in this fashion.[10] The number of granules per lymphocyte is a less arbitrary method of reporting the observations and is now used routinely

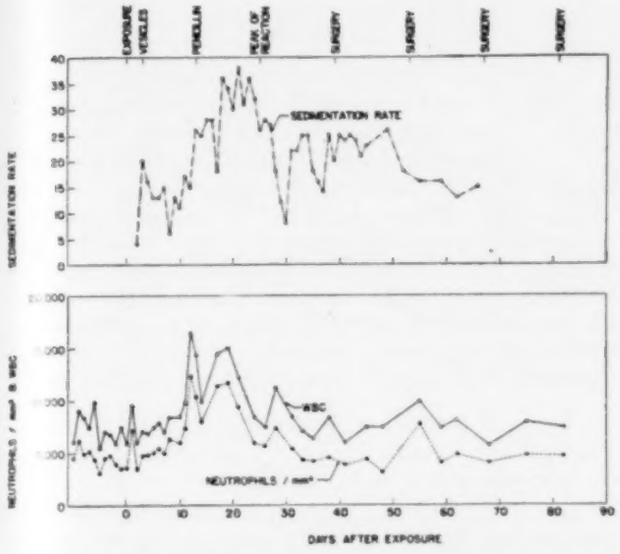

Fig. 11 (case 1).—Sedimentation rates, white blood cell counts and absolute neutrophil counts at various stages of treatment.

by this laboratory. In the preexposure portion of the curve showing the percentage of lymphocytes with six or more granules all the values have been averaged, because fewer lymphocytes were examined per count for these routine preexposure observations.

The response of the total white blood count, the neutrophil count and the sedimentation rate appeared to run parallel with the development of vesicles and bullae on the hands and the febrile response. Presumably the destruction of tissue which occurred during this time caused these hematologic changes. Thus, data on case 1 showed the severest formation of bullae and also the greatest changes in these blood tests.

There were no significant changes in the absolute lymphocyte count at any time after exposure. However, there was a definite morphologic change in these cells manifested by an increased number of refractive granules in the supravital preparations. This change was observed earlier than the increase in the neutrophils or the sedimentation rate. In case 2 the patient, who probably received more radiation than any of the others, had a lesser increase in refractive granules and a more rapid epithelization of the burned areas than occurred in cases 1 and 3. This suggests that the response of the lymphocytic granules may be related to the local disease of the hands and may possibly serve as an early indication of the seriousness of the burn, but further studies are needed to establish this point.

A rise in reticulocytes to 1 to 2 per cent in all cases is difficult to explain. These patients were at sea level for about ten days and returned to Los Alamos (elevation 7,400 feet). It appears unlikely that this increase in altitude caused a reticulocyte response, because 4 men all had lived at Los Alamos for at least one year before their short sojourn at sea level. The reticulocytosis is more likely due to an erythroid response in the bone marrow following the destruction of tissue.

The hemoglobin values and the erythrocyte and platelet counts at no time showed significant variations from normal. The prothrombin times, bleeding times and clotting times were determined frequently during the course of the illnesses and were always within normal limits. The absolute monocyte, eosinophil and basophil counts did not disclose significant variation from the normal.

Urinalyses always gave normal results, and tests for radioactivity in twenty-four hour urine specimens collected on the third day after exposure resulted negatively.

Determinations of serum proteins with albumin-globulin ratios, serum bilirubin, alkaline phosphatase, cephalin flocculation and blood urea nitrogen, as well as daily nitrogen balance studies, were all normal during the illnesses.

TREATMENT

The initial treatment consisted of immobilization, elevation and cooling of the involved hands with ice packs. The men were placed on a high protein diet with supplementary multiple vitamins and were given rutin 20 mg. three times a day, the latter because of the possible therapeutic effects in capillary damage.[12]

Penicillin therapy, 300,000 units (duracillin®) per day, was started in case 1 after drainage of the bullae with the concurrent development of a low grade fever and increase in sedimentation rate; in cases 2 and 3 it was started after the first débridement. This was considered to be prophylactic therapy because of the possible deleterious effects of concurrent infection.

The surgical débridements were performed in cases 1, 2 and 3 on the thirty-ninth, fifty-third and sixty-seventh days after exposure, with the patient under general anesthesia because of the extreme tenderness of the tissue. An attempt was made to clean off all necrotic tissue without damaging the newly formed epithelium. The lesions were covered with petrolatum gauze, and pressure dressings were applied. These dressings were kept on for about fourteen days. Gentle manipulation of the involved fingers was carried out whenever possible while the patients were under anesthesia and throughout the course of the disease. Skin grafting has been performed in cases 1, 2 and 3 with satisfactory "takes."[13] In all cases, phase 4 of the

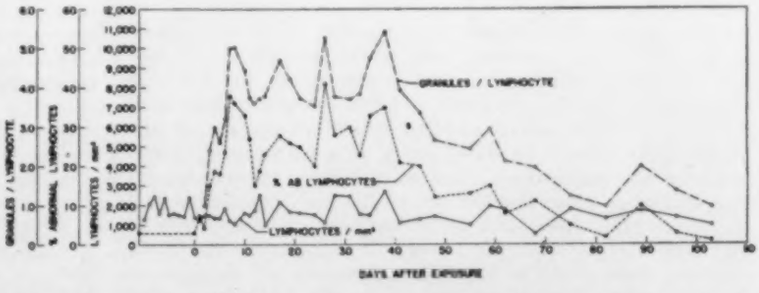

Fig. 12 (case 1).—Refractive granules in the cytoplasm of the lymphocytes at various stages of treatment.

12. Rekers, P. E., and Field, J. B.: Control of Hemorrhagic Syndrome and Reduction in X-Irradiation Mortality with a Flavanone, Science **107**: 16 (Jan. 2) 1948.
13. Brown, J. B.; McDowell, F., and Fryer, M. P.: Surgical Treatment of Radiation Burns, Surg., Gynec. & Obst. **88**: 609-622 (May) 1949.

clinical course has actually just been entered and these persons will have to be followed closely for many years.

SUMMARY AND CONCLUSION

Four cases of beta ray burns of the hands have been reported. Although small doses of beta rays are not considered a serious external radiologic hazard, this form of ionizing radiation is seriously destructive in larger doses. The clinical response to such irradiation may be divided into four phases:

1. A sensation of tingling and itching at the time of exposure followed within a matter of hours by a slight erythema and edema (sometimes associated with blanching of the skin), which lasts for two to three days.

2. A latent, asymptomatic period of three to five days.

3. A secondary erythema, which is soon followed by vesicle and bulla formation. These vesicles dry and desquamate after about three weeks, leaving a new layer of thin epithelium.

4. A chronic phase characterized by atrophic epithelium and loss of secondary epidermal structure. Telangiectases, hyperkeratoses and malignant degenerations are potential complications which may develop over a period of time.

Sometimes, especially in persons receiving a lesser exposure, phase 1 and 2 may pass unnoticed or may be absent altogether. In view of the time lapse between exposure and phase 3, any exposure to beta radiation should be taken seriously.

The only significant hematologic findings were a neutrophilia, an increased sedimentation rate, an increase in the number of refractive granules in the cytoplasm of the lymphocytes and a low grade reticulocytosis. Liver function tests, nitrogen balance studies and urinalyses were consistently normal. Local treatment consisted of routine burn therapy with accessory chilling and later surgical débridement and skin grafting. General treatment involved the use of rutin, high protein diet, multiple vitamins and parenteral penicillin. Prognosis is dependent on the status of the vascular supply to the burned areas, especially as related to the skin grafting. Careful late follow-up studies are necessary in order that early malignant changes may be recognized.

Amebiasis for the Clinician.—Amebiasis means the presence in the human body of *Endamœba histolytica*. The other amebas which are found at times in the human body, with the possible exception of *Diendamœba fragilis*, are nonpathogenic. *D. fragilis* has been associated with severe diarrhea by Hakansson and others, although its actual pathogenicity has not been established. For the physician and the medical student it is necessary only to recognize *E. histolytica* with certainty. A suspected ameba then is identified either as a pathogen, *E. histolytica*, or as a nonpathogen, needing no further attention except as a suggestive guide that the patient has been exposed to fecal or other contamination and, hence, has been exposed to risk of ingestion of cysts of *E. histolytica*. It is desirable that every physician have access to a reliable laboratory for diagnosis of *E. histolytica*. Failing such access, he can for himself often make the diagnosis of the one known pathogenic ameba. Knowledge of its diagnosis and treatment is essential for every practicing physician, but is too often lacking. . . . In the past 10 years, research has introduced no feasible new methods in diagnosis and treatment. However, the literature reflects two new emphases that are important. The first is attention to X-ray findings, especially in the cecum. The second is control of secondary bacterial infections of amebic lesions with penicillin and sulfa drugs.—Alfred C. Reed, M.D., Department of Medicine, Stanford University School of Medicine, San Francisco, *Stanford Medical Bulletin*, August 1949.

GENETICS OF ATHEROSCLEROSIS

Studies of Families with Xanthoma and Unselected Patients with Coronary Artery Disease Under the Age of Fifty Years

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In a previous report [1] attention was called to the fact that familial xanthomatosis is by no means a rare disorder. It has long been so regarded only because its two most striking external manifestations, xanthoma tuberosum and xanthoma tendinosum, are met with infrequently. It was also pointed out that a close relation exists between this hereditary disorder and atherosclerosis. The present study enlarges and completes our data dealing with xanthomatous families and links the results with those of a previous investigation,[2] in which patients with coronary artery disease were studied for evidence of disturbed lipid metabolism.

FAMILIAL XANTHOMATOSIS

Thirty-Five Families and Twenty-Nine Additional Persons with Xanthomatosis

During the past few years in which we have searched patients for stigmas of xanthomatous disease, we have encountered 64 persons (index cases) with this hereditary disorder and have studied 137 members of the families of 35 of these patients. In the thirty-five families 172 persons were therefore available for analysis. Together with 29 patients with xanthomatosis whose families were not available for study, the series comprises 201 persons, 118 males and 83 females (see the accompanying table).

Among these 201 persons studied, 49 (24 per cent) exhibited what we have designated the full syndrome; that is, hypercholesterolemia, coronary artery disease and one or more of the following: xanthoma tuberosum or tendinosum, xanthelasma and corneal arcus.[3] The serum cholesterol level was determined in 175 of the 201 persons. One hundred and twenty-two (69 per cent) had hypercholesterolemia (300 mg. per hundred cubic centimeters or above).

In Bloor's original publication [4] of his method, 220 mg. per hundred cubic centimeters was stated to be the upper limit of normal. Peters and Man [5] determined the normal average serum cholesterol to be 194.1 mg. ± 35.6 mg. per hundred cubic centimeters in a study of 174 normal persons. As pointed out by Stecher and Hersh,[6] three times this standard deviation above the mean places the upper limit of normality at 300.9 mg. "Such a figure would allow only 1 or 2 persons in 1,000 to be above 300 mg. per hundred cubic centimeters and still be classified as normal in cholesterol concentration." In a former

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From the medical services of Mount Sinai Hospital.

Dr. L. C. Dunn, professor of zoology, Columbia University, assisted in the analysis of the genetic aspects of the families reported in this study; technical help was given by Mrs. Katherina Newerly, Mrs. Alice P. Freedman and Mrs. Beatrice P. Ferber.

1. Boas, E. P., and Adlersberg, D.: Familial Hypercholesterolemia (Xanthomatosis) and Atherosclerosis, J. Mt. Sinai Hosp. **12**: 84 (May-June) 1945.

2. Boas, E. P.; Parets, A. D., and Adlersberg, D.: Hereditary Disturbance of Cholesterol Metabolism: A Factor in the Genesis of Atherosclerosis, Am. Heart J. **35**: 611 (April) 1948.

3. In view of the fact that arcus of the cornea is not limited to elderly persons or etiologically related to age, the designations arcus senilis and arcus juvenilis are inappropriate. The term corneal arcus describes the sign clinically and is applicable to any age. In European literature the sign is referred to as arcus lipoides.

4. Bloor, W. R.: The Determination of Cholesterol in Blood, J. Biol. Chem. **24**: 227 (March 16) 1916.

5. Peters, J. P., and Man, E. B.: The Interrelation of Serum Lipids in Normal Persons, J. Clin. Investigation **22**: 707 (Sept.) 1943.

6. Stecher, R. M., and Hersh, A. H.: Note on the Genetics of Hypercholesterolemia, Science **109**: 61 (Jan. 21) 1949.

Clinical and Chemical Observations in Two Hundred and One Persons Belonging to Families with Xanthoma

Family	Member	Relationship to Index Case †	Age	Sex	Serum Cholesterol (Mg. per 100 Cc.)	Coronary Artery Disease	Xanthelasma	Corneal Arcus	Xanthoma	Hypertension	Remarks
1	M. M.*	(See text and fig. 4)	46	M	764	+	+	+	+	..	
(See fig. 4)	J. B.		49	M	420	..	..	..	..	..	
	W. B.		47	M	344	..	..	..	..	..	
	C. B.		44	M	324	..	..	..	..	..	
	L. B.		51	M	256	..	..	..	..	..	
	I. B.		41	M	364	..	..	..	..	..	
	J. B.		7	M	380	..	..	..	..	..	
	M. K.		48	F	788	+	+	+	+	..	
	B. K.		21	M	242	..	..	..	..	..	
	C. M.		56	M	630	+	+	..	..	+	
	S. M.		26	M	425	..	..	..	..	..	
	I. B.		29	F	250	..	..	..	..	..	
	M. K.		23	F	480	..	..	..	..	..	
	T. M.		14	F	320	..	..	..	..	..	
	C. M.		57	M	388	+	..	..	..	..	
	B. M.		47	F	374	..	+	..	..	..	
	H. M.		25	M	374	..	..	..	..	..	
	M. M.		29	F	286	..	+	..	..	..	
	D. B.		64	F	340	..	..	..	..	+	
	D. B.		28	M	325	..	..	..	..	..	
2	E. I.*	..	39	M	834	+	..	+	+	..	
(See	P. I.	F	73	M	364	..	..	+	..	+	
fig. 5)	H. I.	M	67	F	816	..	+	+	..	+	
	H. I.	B	48‡	M	648	+	+	+	+	..	Died, 48, cardiac infarction
	H. I.	B	38	M	512	..	..	..	..	..	
	Y. I.	S	42	F	316	..	+	..	+	..	
	R. M.	C	31	M	227	..	..	..	..	..	
	T. M.	C	23	F	1,032	..	..	..	+	..	
3	M. K.*	..	29	F	420	+	..	..	+	..	
(See	J. C.	F	58‡	M	§	+	+	..	..	..	
fig. 6)	M. C.	M	58	F	333	..	..	+	..	+	
	T. C.	B	33	M	240	..	..	..	..	+	
	J. C.	B	22	M	895	+	..	+	+	..	
	H. C.	S	34	F	240	..	..	..	..	..	
	M. C.	S	25	F	200	..	..	..	..	..	
	P. K.	D	5	F	260	..	..	..	..	..	
4	S. S.*	..	41‡	M	700	+	+	..	+	..	Died, 41, cardiac infarction
(See	M. F.	S	50	F	272	..	..	..	..	+	
fig. 7)	S. S.	Sn	13	M	471	..	..	..	..	..	
	M. S.	D	7	F	295	..	..	..	..	..	
	A. E.	A	59	F	490	..	..	..	..	+	
5	S. B.*	..	43‡	F	525	+	+	..	..	+	Died, 43, suddenly
(See	C. B.	B	50	M	410	+	..	..	..	..	
fig. 8)	M. B.	B	39	M	560	..	..	+	+	..	
	I. D.	B	37‡	M	§	+	..	..	..	..	Died, 37, cardiac infarction
	S. D.	B	31‡	M	§	+	..	..	..	+	Died, 31, cardiac infarction
	M. D.	S	54	F	415	..	..	..	..	..	
	J. B.	D	24	F	535	..	..	..	..	..	
	K. B.	D	16	F	540	..	..	..	..	..	
	S. D.	Ne	12	M	210	..	..	..	..	..	
	R. D.	Ni	16	F	140	..	..	..	..	..	
	E. K.	Ni	21	F	290	..	..	..	..	..	
6	E. F.*	..	46	M	430	+	+	..	+	..	Gout, hypothyroidism, cholecystitis
(See	B. F.	F	78‡	M	§	+	..	..	..	..	
fig. 9)	S. F.	M	78‡	F	350	..	+	..	..	..	Hypothyroidism, diabetes mellitus
	S. F.	Sn	16	M	300	..	..	..	..	..	
7	J. F.*	..	46	M	515	+	+	..	+	..	
(See	P. F.	M	79	F	269	..	+	..	..	..	
fig. 10)	M. F.	B	42	M	432	..	+	..	..	..	
	M. A.	S	43	F	461	+	+	..	..	..	
8 (See fig. 12)	A. K.*	..	29	F	501	+	+	..	+	..	Maternal grandfather and his three brothers died of "angina pectoris"
	M. K.	M	56‡	F	§	+	+	..	+	..	Died, 56, cardiac infarction
	F. K.	B	24	M	§	..	..	..	..	+	
	T. K.	B	19	M	401	..	..	..	..	..	
9	I. F.*	..	48	F	360	..	+	..	..	..	Cholecystitis
(See	B. S.	F	69	M	§	+	..	..	..	..	
fig. 11)	A. S.	M	60‡	F	§	+	..	..	..	..	Died, 60, cardiac infarction
	E. S.	B	46	M	400	+	..	..	..	..	
	G. S.	B	39	M	500	+	..	..	..	..	
10	B. S.*	..	31	M	475	+	+	..	..	..	
	R. S.	M	61	F	380	..	..	..	..	..	
	H. S.	B	37	M	375	..	..	..	..	..	
	L. S.	B	26	M	175	..	..	..	..	..	
	J. S.	Ne	3½	M	195	..	..	..	..	..	
	B. S.	Ne	1½	M	217	..	..	..	..	..	
11	H. A.*	..	40	M	272	+	..	+	..	..	
	M. A.	B	38	M	241	..	..	..	..	..	
	J. A.	B	38	M	357	..	..	+	..	..	
	S. A.	B	25	M	220	..	..	..	..	..	
	A. F.	S	35	F	220	..	..	..	..	..	
	S. N.	S	28	F	262	..	..	..	..	..	
12	J. W.*	..	47	M	425	+	..	+	..	..	
	B. W.	B	51	M	168	..	..	..	..	..	
	M. W.	B	45	M	140	..	..	..	..	..	
	I. W.	B	42	M	274	..	..	..	..	..	
	R. G.	S	58	F	306	..	..	..	..	..	
	A. G.	S	49	F	257	..	..	..	..	..	

Clinical and Chemical Observations in Two Hundred and One Persons Belonging to Families with Xanthoma—Continued

Family	Member	Relationship to Index Case †	Age	Sex	Serum Cholesterol (Mg. per 100 Cc.)	Coronary Artery Disease	Xanthelasma	Corneal Arcus	Xanthoma	Hypertension	Remarks
13	I. K.*	..	46	M	220	+	..	+	..	..	
	H. K.	B	52	M	220	..	..	..	..	..	
	B. K.	B	44	M	325	..	..	..	..	..	
	J. K.	B	38	M	257	..	..	..	..	-	
	B. K.	S	50	F	232	..	..	..	..	..	
	S. H.	S	39	F	284	..	..	..	..	..	
14	B. S.*	..	56	F	518	+	+	..	..	..	Diabetes mellitus; husband has xanthelasma
	S. S.	Sn	39	M	311	..	+	..	..	..	
	S. S.	Sn	29	M	326	..	..	..	..	..	
	M. P.	D	35	F	368	..	+	..	..	..	
	M. G.	D	34	F	246	..	..	..	..	..	
15	B. R.*	..	34	F	336	+	..	..	..	-	
	S. R.	B	40	M	357	..	..	+	..	..	
	D. R.	B	30	M	227	..	..	..	..	..	
	A. R.	S	39	F	207	..	..	..	..	..	
	A. R.	S	32	F	241	..	..	..	..	..	
16	F. Z.*	..	48	F	345	+	..	..	..	+	
	B. M.	B	47	M	320	..	..	..	..	..	
	E. M.	B	42	M	240	..	..	..	..	..	
	C. C.	S	53	F	330	..	..	..	..	..	
	G. S.	S	39	F	304	..	..	..	..	..	
17	M. S.*	..	42	M	450	..	+	..	+	..	
	G. S.	F	62	M	§	..	+	..	..	..	
	B. S.	G	58‡	M	§	..	+	..	..	..	
	R. S.	U	64‡	M	§	+	..	..	..	..	
	B. L.	A	60	F	§	+	..	..	..	..	
18	S. A.*	..	49	F	360	+	+	..	..	+	
	N. A.	B	42	M	§	+	..	..	..	..	
	B. A.	S	40	F	§	..	+	..	..	..	
	J. C.	S	55	F	§	..	+	..	..	..	
19	H. R.*	..	38	M	736	+	+	..	..	..	
	R. R.	B	27	M	178	..	..	..	..	..	
	D. R.	S	42	F	200	..	..	..	..	..	Diabetes mellitus
	M. R.	S	34	F	458	..	..	..	..	..	Cholecystitis
20	M. M.*	..	51	M	360	+	+	..	..	+	
	H. M.	F	60‡	M	§	..	+	..	..	..	Died, 60, cerebral hemorrhage
	F. M.	B	61	M	§	..	+	..	..	..	
	D. M.	S	58	F	§	..	+	..	..	..	
21	M. A.*	..	56	F	760	+	..	..	..	..	
	J. A.	H	59	M	§	..	+	..	..	..	
	H. A.	Sn	35	M	420	..	..	..	..	..	
	S. A.	Sn	25	M	400	..	..	..	..	..	
22	R. W.*	..	31	F	730	..	+	..	..	..	
	S. F.	M	51	F	230	..	..	..	..	..	
	J. F.	B	29	M	321	..	..	..	..	..	
	M. F.	B	19	M	289	..	..	..	..	..	
23	C. B.*	..	55	M	425	+	+	..	..	..	
	L. G.	S	58	F	358	..	..	..	..	..	
	A. B.	Sn	31	M	259	..	..	..	..	..	
	K. D.	D	30	F	256	..	..	..	..	..	
24	S. D.*	..	47	M	333	+	..	+	..	+	
	P. D.	B	53	M	245	..	..	..	..	..	
	H. D.	B	49	M	198	..	..	..	..	..	
	M. D.	B	42	M	214	..	..	+	..	..	
25	R. F.*	..	51	F	548	+	+	..	..	+	
	A. S.	S	48	F	326	..	..	..	..	..	
	S. F.	D	23	F	380	..	..	..	..	..	
26	L. W.*	..	41	F	600	..	+	..	..	+	
	L. W.	Sn	11	M	400	..	..	..	..	..	
	R. W.	D	21	F	410	..	..	..	..	..	
27	S. G.*	..	51	F	570	+	..	..	+	..	
	M. G.	B	45	M	§	..	+	..	..	..	
	T. G.	S	59‡	F	§	+	..	..	+	..	Died suddenly
28	A. S.*	..	31	M	500	+	+	+	..	..	
	G. S.	F	58‡	M	§	+	..	..	..	..	Died, 58, cardiac infarction
	M. S.	B	29	M	360	..	..	..	..	..	
29	I. S.*	..	51	F	362	+	+	..	..	..	
	C. M.	S	58	F	302	..	+	..	..	..	
	H. M.	Ni	38	F	§	..	+	..	..	..	
30	M. S.*	..	45	M	336	+	..	+	..	..	
	M. S.	B	50	M	308	..	..	..	..	..	
	I. F.	S	47	F	424	..	..	..	..	..	
31	H. P.*	..	52	M	322	+	..	+	..	..	
	L. B.	S	54	F	325	..	..	..	..	..	
	T. R.	S	47	F	350	..	..	..	..	..	
32	J. C.*	..	55	M	315	+	..	+	..	..	
	M. C.	B	65	M	325	..	..	..	..	..	
	A. K.	S	50	F	330	..	..	..	..	..	
33	C. G.*	..	51	M	326	+	+	..	..	..	
	A. G.	F	63‡	M	§	..	+	..	..	..	Diabetes mellitus
	H. G.	B	59	M	§	+	..	..	..	..	
34	S. L.*	..	44	M	469	+	..	..	+	..	
	S. L.	B	52	M	480	+	..	..	..	..	
35	I. N.*	..	33	M	680	..	+	..	+	..	
	R. N.	M	60	F	§	+	+	..	..	..	

Clinical and Chemical Observations in Two Hundred and One Persons Belonging to Families with Xanthoma—Continued

Member	Relationship to Index Case †	Age	Sex	Serum Cholesterol (Mg. per 100 Cc.)	Coronary Artery Disease	Xanthelasma	Corneal Arcus	Xanthoma	Hypertension	Remarks
Individual Cases										
M. F.	..	61	M	300	+	+	..	..	+	
F. S.	..	60	F	515	..	+	..	+	..	
H. G.	..	47	M	378	+	..	..	+	..	
E. R.	..	40	F	357	+	+	..	..	+	
M. L.	..	43	M	342	+	+	..	..	..	
A. A.	..	51	F	262	+	+	..	..	..	
L. M.	..	48	M	412	+	+	..	..	..	
S. C.	..	47	M	470	+	+	..	..	..	
F. P.	..	50	F	250	+	+	..	..	..	
N. B.	..	48	M	372	+	..	+	+	..	
D. T.	..	50	M	276	+	+	..	..	..	
J. W.	..	40	M	450	+	+	..	..	..	
J. S.	..	42	M	456	..	+	..	..	..	
H. A.	..	47	M	328	+	..	+	..	..	
C. S.	..	46	F	600	+	+	..	+	..	Cholecystitis
E. W.	..	38	M	310	+	..	+	..	..	
M. B.	..	50	M	280	+	..	+	..	..	
I. C.	..	47	M	380	+	..	+	..	..	
O. S.	..	42	M	232	+	..	+	..	..	
R. R.	..	41	F	376	+	..	+	..	..	
I. B.	..	49	F	320	+	..	+	..	..	
S. M.	..	42	M	386	+	..	+	..	..	
I. P.	..	50	M	356	+	..	+	..	..	
I. G.	..	43	M	291	+	..	+	..	..	
E. K.	..	49	F	296	+	..	+	..	..	
L. E.	..	43	M	396	+	..	+	..	..	
R. A.	..	47	M	283	+	..	+	+	..	
J. N.	..	48	M	358	+	..	+	..	..	
E. R.	..	49	F	400	..	..	..	+	..	

*Index case.

† Abbreviations indicating relationship to index case: F, father; M, mother; B, brother; S, sister; Sn, son; D, daughter; U, uncle; A, aunt; C, cousin; Ne, nephew; Ni, niece; H, husband, and G, grandparent.

‡ Died.

§ Patient not examined personally, but data based on autopsy records, communications from other physicians or reliable information submitted by kin.

study [2] we selected 300 mg. per hundred cubic centimeters as indicative of hypercholesterolemia. Wilkinson, Hand and Fliegelman,[7] however, basing their criteria of hypercholesterolemia on the genetic pattern of transmission of xanthomatosis, have expressed their belief that 280 mg. per hundred cubic centimeters may be considered an abnormal elevation.

Xanthelasma was present in 61. Tuberous or tendinous xanthoma was found in 25, all of whom had hypercholesterolemia except 2, whose cholesterol level was unknown. These 2 persons had died of cardiac infarction before these studies were undertaken. Corneal arcus was present in 35, 28 of whom were less than 50 years of age.

In the entire series of 201 persons, coronary artery disease was present in 80 (40 per cent); among the 172 members composing the thirty-five families, it was present in 54 (31 per cent). The high incidence of coronary artery disease in this material resulted in part because most patients (index cases) sought treatment for their cardiac disorder. Nonetheless, the data indicate that the two abnormalities found most frequently among members of xanthomatous families are elevated serum cholesterol level and coronary atherosclerosis. Xanthelasma and corneal arcus are next in frequency while xanthomatosis, the stigma from which the disorder derives its name, is found least often.

The association of hypercholesterolemia with coronary artery disease in members of xanthomatous families is striking. Among the 80 patients of the entire series who had disease of the coronary vessels, the serum cholesterol level was determined in 66 and found elevated above 300 mg. per hundred cubic centimeters in 57. Among the 54 patients with coronary artery disease who were members of the thirty-five families investigated, the serum cholesterol was determined in 40 and found above normal in 38. Also noteworthy is the early onset of coronary atherosclerosis. In 49 of the 80 patients (61 per cent), cardiac symptoms had appeared before the age of 50 years. Of these 49, all but 5 exhibited hypercholesterolemia at the time of examination. Hypertension was an infrequent observation; it was present in only 12 of the patients with coronary artery disease.

Typical cutaneous and tendinous lesions characterizing the disorder are shown in figures 1 to 3. Discovery of such lesions should alert the examiner to study members of the patient's family for similar lesions and also for hypercholesterolemia and cardiac disease, latent or overt.

GENETIC CONSIDERATIONS

The hereditary nature of familial xanthomatosis has been emphasized by many authors.[8] However, its mode of transmission has been much debated. This has been due in part to the tendency of most investigators to use the cutaneous lesions instead of serum cholesterol levels as the characteristic sign of the disorder. At one extreme are Thannhauser and Schmidt,[8e] who have expressed their belief that the disorder is transmitted as a recessive trait. This would be unlikely if the frequency of the gene for this condition in the general population should prove to be low (below 0.5 per cent), because in that case a significant increase in the incidence of cousin marriages among the parents of affected persons should be found. This has not been observed. Müller [8b] and Svendsen [8c] have favored a dominant mode of transmission as have also Bloom, Kaufman and Stevens.[8d] The last-mentioned workers attempted

7. Wilkinson, C. F. Jr.; Hand, E. A., and Fliegelman, M. T.: Essential Familial Hypercholesterolemia, Ann. Int. Med. **29**: 676 (Oct.) 1948.

8. (*a*) Gossage, A. M.: The Inheritance of Certain Human Abnormalities, Quart. J. Med. **1**: 331, 1908. Lane, G. C., and Goodman, J. Jr.: Xanthoma Tuberosum, Arch. Dermat. & Syph. **32**: 377 (Sept.) 1935. Sperry, W. M., and Schick, B.: Essential Xanthomatosis: Treatment with Cholesterol-Free Diet in Two Cases, Am. J. Dis. Child. **51**: 1372 (June) 1936. (*b*) Müller, C.: Xanthomata, Hypercholesterolemia, Angina Pectoris, Acta med. Scandinav., 1938, supp. 89, p. 75. (*c*) Svendsen, M.: Are Supernormal Cholesterol-Values in Serum Caused by a Dominantly Inherited Factor? ibid. **104**: 235, 1940. (*d*) Bloom, D.; Kaufman, S. R., and Stevens, R. A.: Hereditary Xanthomatosis, Arch. Dermat. & Syph. **45**: 1 (Jan.) 1942. (*e*) Thannhauser, S. J., and Schmidt, G.: Lipins and Lipidoses, Physiol. Rev. **26**: 275 (April) 1946.

to determine whether increased serum cholesterol or xanthoma, or both, were dominant traits by studying one family of ten siblings, several of whom exhibited the full syndrome of hypercholesterolemia, xanthoma and cardiovascular disease. Although their observations are not conclusive, they offer strong support for belief that this syndrome is inherited as a dominant trait. The authors also stress that hypercholesterolemia rather than xanthomatosis is the principal manifestation of the inherited factor which produces, under certain conditions, cutaneous as well as cardiovascular lesions. Our own observations published subsequently [1] tended to support the view that hypercholesterolemia is transmitted as a dominant trait. Recently, Wilkinson, Hand and Fliegelman [7] presented the best evidence to date that familial hypercholesterolemia is transmitted as an "incomplete" dominant trait. The results of the present study tend, in general, to confirm the postulate that hypercholesterolemia represents the heterozygous abnormal state while xanthoma represents the homozygous abnormal state. Descent tables of several

Fig. 1.—Xanthelasma of A. K., a member of family 8 in the accompanying table.

instructive series of familial xanthomatosis are presented in figures 4 to 12 to aid in clarifying genetic factors.

Figure 4 illustrates a kindred in which hypercholesterolemia is traceable through three generations. In the mating of A-1 and A-2 there were 3 offsprings, all of whom had hypercholesterolemia and coronary artery disease. Two of them had tendon xanthomas as well. Of the 7 grandchildren, the oldest of whom was 29 years of age, cholesterol determinations were made in 5; in 3 of these it was distinctly elevated. Both A-1 and A-2 had been married previously, and each had had offspring from a different partner. We examined 2 of 7 living descendants resulting from the earlier union of A-2 and A-3 and found hypercholesterolemia without manifest disease in the 2. The union of A-1 and A-4 had resulted in 4 offspring, 1 of whom had 10 descendants. We examined 5 of the 10 descendants, 1 being in the third generation, and found all 5 to have elevated serum cholesterol but no evidence of heart disease or xanthoma. We were also able to examine the son of a sibling of A-1. This person, B-1, has hypercholesterolemia and coronary artery disease. His wife, B-2, though not a member of the original family, has xanthelasmas and hypercholesterolemia. The union of B-1 and B-2 resulted in 2 offspring, 1 of whom has a serum cholesterol level of 374 mg., and the other 286 mg., per hundred cubic centimeters. Genetic analysis of this descent table indicates that A-1 and A-2 can be presumed to have had hypercholesterolemia. Their union resulted in a high frequency of hypercholesterolemia, xanthoma and heart disease. Union of A-2 (presumed to have hypercholesterolemia) with A-3 (presumably normal) reduced the incidence of manifest lesions in the offspring. A similar situation resulted from the union of A-1 (presumed to have hypercholesterolemia) with A-4 (presumably normal). However, hypercholesterolemia itself was exhibited by descendants in the third generation. Other families in which hypercholesterolemia can be traced through three generations are shown in figures 7 and 9.

Transmission of the metabolic fault as a dominant trait is exemplified by the family in figure 5. In this kindred both A-1 and A-2 have hypercholesterolemia. All 4 of their offspring also have hypercholesterolemia; 3 have xanthoma and 2 have coronary artery disease. One of the latter has since died of myocardial infarction. It is also interesting to note that both parents have corneal arcus, which 2 of the offspring also exhibit, 1 being 39 years of age. In this family it is assumed that the mating of heterozygotes, A-1 and A-2, each of whom carried one abnormal cholesterol gene, produced homozygous abnormal persons with severe disease; namely, xanthoma. These xanthomatous subjects probably carry two abnormal cholesterol genes. With one exception,[9] our data reveal that patients with xanthoma are the offspring of two hypercholesterolemic parents, in instances in which the cholesterol determination of the parents could be made. In this connection it should be noted that every patient in the entire series (see the table) who exhibited xanthoma (that is, was an abnormal homozygote) had an elevated serum cholesterol level.

In the family represented in figure 6 one parent was known to have hypercholesterolemia; the status of the other was not determined. Xanthoma and coronary artery disease were present in 2 offspring. A similar situation obtains in figure 9. In both of these families the parent whose cholesterol level was unknown may be presumed to have been an abnormal heterozygote with an elevated serum cholesterol level.

Four instances of coronary artery disease among six siblings of a xanthomatous family are illustrated in figure 8. Three of the 4 died suddenly of cardiac infarction while relatively young. The index case, B-3, came to our attention when the woman had coronary thrombosis at 43 years of age. The cholesterol level of the blood was determined because of the presence of xanthelasmas and was found to be 525 mg. per hundred cubic centimeters. The patient died suddenly a few months later. Investigation of the remaining living members of her family revealed stigmas of hypercholesterolemia as indicated in the family tree. B-5 and B-6 were known to have died of cardiac infarction at the ages of 37 and 31, respectively. The autopsy

9. The exception, A-2 in figure 10, may be more apparent than real, for serum cholesterol levels of a hypercholesterolemic person, unlike those of a normal subject, tend to fluctuate greatly at different times. While the fluctuations are usually within the supranormal range, an occasional value will fall below the accepted level of 300 mg. per hundred cubic centimeters.

record of B-6 revealed far advanced atherosclerosis of unknown origin in a young man. In retrospect the true nature of this patient's disorder became apparent.

The frequent association of xanthoma and coronary artery disease in members of affected families and the frequency of coronary atherosclerosis in these families might lead one to suspect that perhaps atherosclerosis, like xanthoma, represents the homozygous abnormal state. The families represented in figures 8, 11 and 12, in which a relatively high frequency of coronary artery disease is seen, would seem to lend support to this concept. Actually, such is not the case. As noted previously, not all patients with coronary artery disease exhibit hypercholesterolemia and xanthoma. By definition the abnormal homozygote will have hypercholesterolemia and either tendinous or tuberous xanthoma.

UNSELECTED PATIENTS

One Hundred and Twenty-Two Unselected Patients Under Fifty Years of Age with Coronary Artery Disease

While the study reported in the foregoing section of this article was in progress a second related investigation was conducted.[2] The material consisted of (1) 122 patients with proved coronary artery disease whose symptoms began under the age of 50 years and (2) the families of 50 of these patients. The patients with coronary artery disease were unselected, consecutive patients as seen routinely in office practice. Patients known to be members of a xanthomatous family were excluded. All patients and family members were examined for clinical evidence of disturbed lipid metabolism, and one or more serum cholesterol determinations were made. Among the 122 patients with coronary atherosclerosis, the mean serum cholesterol was 316 mg. per hundred cubic centimeter (± 7.49, standard deviation of the mean). This agrees in general with the cholesterol levels found by others[10] who studied cholesterol concentration in coronary artery disease. Seventy-one (58 per cent) of the 122 patients exhibited serum cholesterol elevated above 300 mg. The distribution of cholesterol values is charted in figure 13.

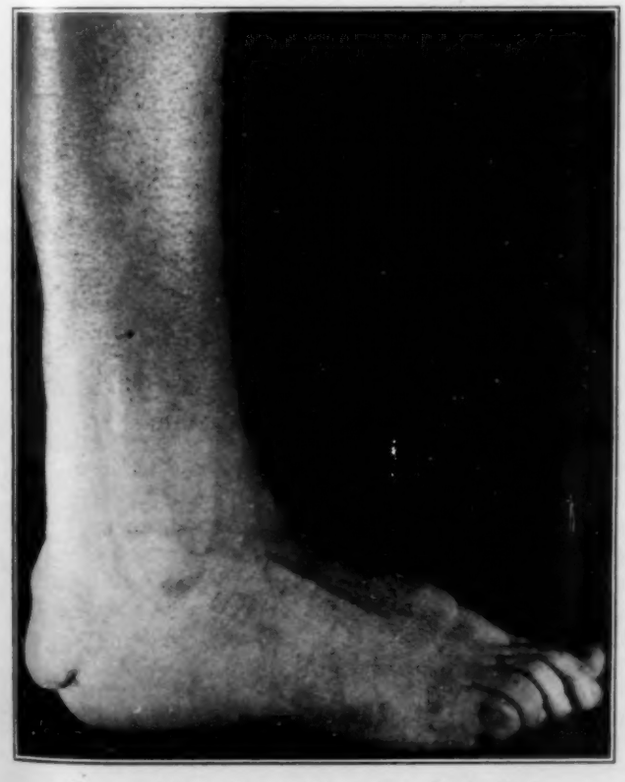

Fig. 2.—Achilles tendon xanthoma of A. K., family 8.

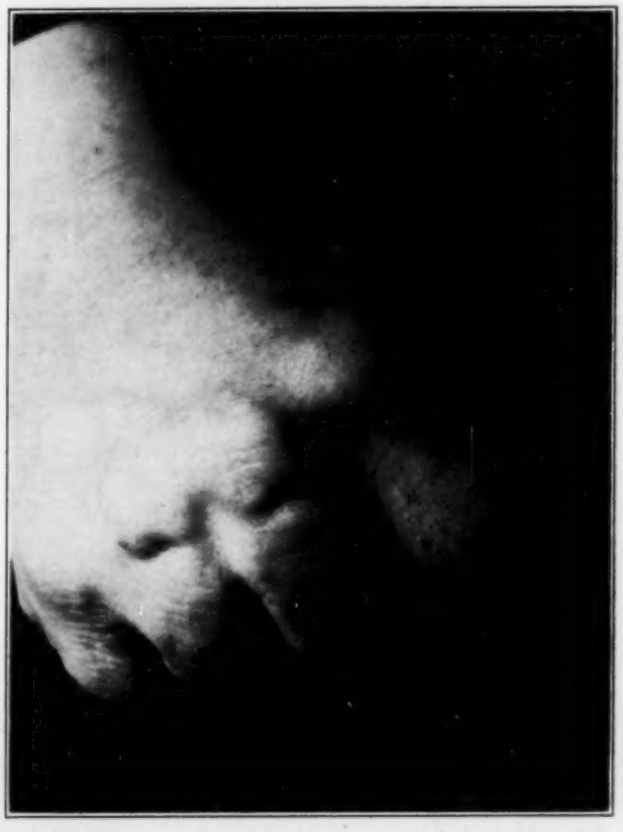

Fig. 3.—Xanthoma of hand of S. S., a member of family 4 in the accompanying table.

Corneal arcus was present in 22, xanthelasma in 12 and xanthomatosis in 3 of the 122 patients studied. Hypertension was present in only 21. Recently Morrison, Hall and Chaney[10b] found serum cholesterol elevated above 260 mg. per hundred cubic centimeters in 68 per cent of 70 patients who experienced cardiac infarction under the age of 60 years.

In fifteen of the fifty families studied (30 per cent) all or most siblings exhibited hypercholesterolemia. In nine more families one half of the siblings exhibited hypercholesterolemia.

COMMENT

Frequent involvement of the cardiovascular system in familial xanthomatosis has long been recognized.[11] Among 65 patients with xanthoma of the skin Montgomery[12] found 40 per cent affected with coronary artery or occlusive vascular disease of the extremities.

10. (*a*) Steiner, A., and Domanski, B.: Serum Cholesterol Level in Coronary Arteriosclerosis, Arch. Int. Med. **71**: 397 (March) 1943. Lerman, J., and White, P. D.: Metabolic Changes in Young People with Coronary Heart Disease, J. Clin. Investigation **25**:914, 1946. Herrmann, G. R.: Cholesterol Levels in Various Diseases and the Effects of Decholesterizing Agents, Texas State J. Med. **42**:260 (Aug.) 1946. (*b*) Morrison, L. M.; Hall, L., and Chaney, A. L.: Cholesterol Metabolism: Blood Serum Cholesterol and Ester Levels in Two Hundred Cases of Acute Coronary Thrombosis, Am. J. M. Sc. **216**:32 (July) 1948.

11. Fagge, C. H.: Xanthomatous Diseases of the Skin: I. General Xanthelasma or Vitiligoidea, Tr. Path. Soc. London **24**: 242, 1873.

12. Montgomery, H.: Cutaneous Manifestations of Diseases of Lipoid Metabolism, M. Clin. North America **24**:1249 (July) 1940.

The frequency of sudden death from cardiovascular accidents in young persons who exhibit xanthoma and hypercholesterolemia is also well known and has been reemphasized recently by Bloom, Kaufman and Stevens.[8d] They reported a family in which four of five affected siblings died suddenly between the ages of

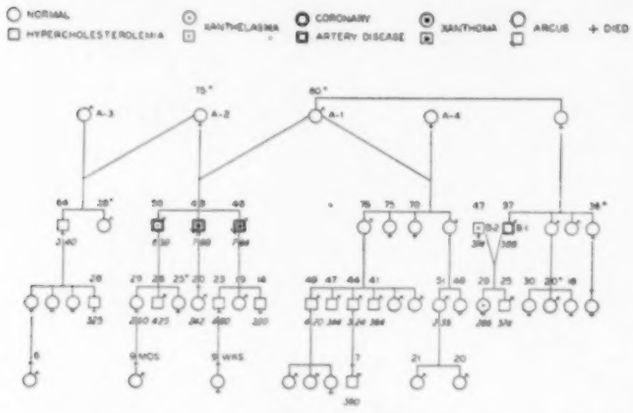

Fig. 4.—Mating of A-1 and A-2 (presumed heterozygotes), producing homozygotes with xanthoma and greatly elevated serum cholesterol. Mating of A-3 with A-2 (presumed normal with presumed heterozygote), producing hypercholesterolemic offspring as does union of A-4 with A-3 (presumed normal with presumed heterozygote). Mating of known hypercholesterolemic subjects, B-1 and B-2, producing 1 offspring with serum cholesterol of 374 mg. and another with serum cholesterol of 286 mg., per hundred cubic centimeters, and xanthelasma. See text for details. The symbols at top of this figure apply also to figures 5 to 12 inclusive.

6 and 23 years of lesions attributable to xanthomatous involvement of the cardiovascular system. Among thirty-five tainted families composed of 172 persons we found 54 members with coronary artery disease. Serum cholesterol was determined in 40 of the 54 and was found to be elevated in 38.

Equally significant is the incidence of hypercholesterolemia among the 122 unselected patients with proved coronary artery disease beginning before the age of 50 years, for in 71 of them (58 per cent) the serum cholesterol value was elevated above 300 mg. per hundred cubic centimeters. In approximately one third of the families of 50 of these patients all or most siblings exhibited hypercholesterolemia, as did one half of the siblings in nine more families. By detailed study of the members who composed these families it became evident not only that elevated serum cholesterol was relatively common among siblings of unselected patients with coronary artery disease but also that other stigmas, especially xanthelasma and corneal arcus, were present in many.

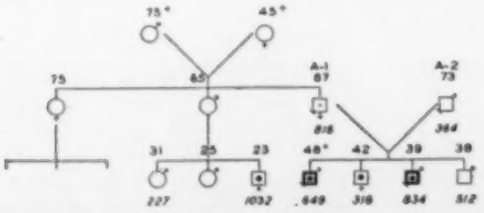

Fig. 5.—Mating of heterozygotes, A-1 and A-2, producing 4 persons with elevated serum cholesterol, 3 with xanthoma and 2 with coronary artery disease.

When the results obtained from the study of familial xanthomatosis are compared with the results of the investigation of unselected patients with coronary artery disease and their families, certain observations overlap and complement each other. There is an unusually high incidence of hypercholesterolemia and coronary artery disease in xanthomatous families. With few exceptions the patients with coronary artery disease in these families exhibit hypercholesterolemia and the majority of them are relatively young. Hypercholesterolemia is also common among unselected patients with coronary artery disease who are under the age of 50 years and in their siblings. Hypercholesterolemia is the link between these two groups which at first appeared to be distinct.

That the elevated serum cholesterol of the siblings of patients with coronary artery disease is not due to chance but is clinically significant has been demonstrated by Stecher and Hersh,[6] who applied a standard genetic test for mode of inheritance to thirty-seven of the fifty families that we investigated. They found that 67 of the 126 children who comprised these thirty-seven families were affected with hypercholesterolemia. The proportion of children expected to be affected if one parent was hypercholesterolemic and the other normal would be 50 per cent of the total, or 70.5 persons, with a standard deviation of 4.8. Because the number actually affected with hypercholesterolemia closely fits this 1:1 mendelian ratio, it is probable that in these families as in the families with xanthoma a hereditary mechanism is involved. By analogy with

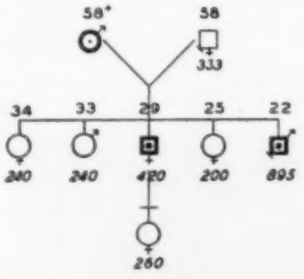

Fig. 6

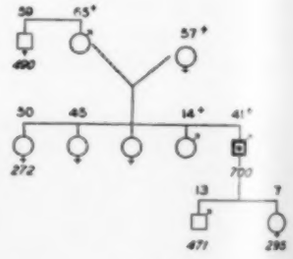

Fig. 7

Fig. 6.—Xanthoma and coronary artery disease in 2 young patients aged 29 and 22 years. One parent was known to be heterozygous, the other was presumed to be heterozygous.

Fig. 7.—Hypercholesterolemia traceable through three generations.

similar data obtained in other hereditary diseases [13] it is probable that the metabolic disturbance which produces hypercholesterolemia is transmitted as a dominant trait.

The common denominator among most of the patients with coronary atherosclerosis appears to be a hereditary disturbance of cholesterol metabolism manifested by hypercholesterolemia. Both the tendency of coronary artery disease to occur in several members of one family and its development in relatively young persons can be explained by this metabolic disorder. Familial xanthomatosis is the severest form of this inherited disorder and is characterized by xanthomatous lesions which, on the basis of the hypothesis, can appear only in an abnormal homozygote. Such patients often exhibit extraordinarily high levels of serum cholesterol and are the result of the mating of two hypercholesterolemic persons (abnormal heterozygotes).[14] In many of them coronary atherosclerosis is fated to

13. Stecher, R. M., and Hersh, A. H.: Heberden's Nodes: Mechanism of Inheritance in Hypertrophic Arthritis of Fingers, J. Clin. Investigation **23**:699 (Sept.) 1944. Stecher, R. M.; Hersh, A. H., and Solomon, W. M.: Ann. Int. Med., to be published.

14. For the sake of completeness it may be added that two other possible but rare matings will also produce an abnormal homozygote: (1) mating of an abnormal homozygote with an abnormal heterozygote and (2) mating of two abnormal homozygotes.

develop, as it is in their hypercholesterolemic siblings. A mild form of disturbed cholesterol metabolism is found in many unselected patients with coronary artery disease and in their relatives. The presence of hypercholesterolemia alone gives no indication whether the patient belongs to a family with the severe or mild form of disturbed cholesterol metabolism.

Many factors other than a hereditary disturbance of cholesterol metabolism manifested by hypercholesterolemia are, of course, involved in the pathogenesis of atheroma. A hereditary disturbance of lipid metabolism is only one of the conditioning factors for the development of coronary artery disease. While no incontrovertible evidence has ever been presented that a high fat and high cholesterol diet will consistently produce hypercholesterolemia in human beings, the high incidence of atherosclerosis among young, obese American soldiers partaking of such diets,[15] as well as the contrasting low rate of coronary artery disease among peoples whose diets seldom contain milk fats [16] cannot be overlooked. Nor can the reduced incidence of atherosclerosis in populations subject to semistarvation diets [17] be omitted from consideration. It may well be that for persons with a tendency toward hypercholesterolemia a "normal" American diet contains sufficient fat and cholesterol to maintain the serum

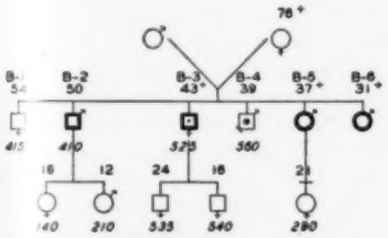

Fig. 8

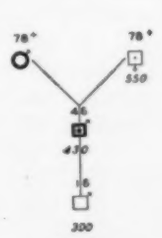

Fig. 9

Fig. 8.—Four of 6 siblings exhibiting coronary artery disease, with death of 3 of them at 43, 37 and 31 years of age, respectively.

Fig. 9.—Hypercholesterolemia traceable through three generations.

cholesterol levels at critical values which hasten atheroma formation, whereas a low fat diet may exert a retarding effect on the pathologic process. The relative importance of endogenous versus exogenous cholesterol metabolism is still unknown. Time must also be reckoned with as a factor, as Anitschkow [18] noted long ago. We have seen the gradual evolution of several manifestations of hypercholesterolemia in patients who when first examined exhibited only one stigma of the disease; eventually other stigmas developed, and the patients finally died of cardiac infarction.

Certain similarities between the clinical behavior of hereditary hypercholesterolemia and gout are of interest. In gout, several members of a single family may exhibit hyperuricemia but only one may be subject to attacks of arthritis and may exhibit tophi. The basic metabolic disturbance in gout, like that in hypercholesterolemia, acts as a conditioning factor. For overt symptoms to appear in either disorder additional mechanisms must be operating. In this connection it may be mentioned parenthetically that a disturbance of uric acid metabolism may possibly play an associative role with hypercholesterolemia in coronary artery disease, for we have found that in approximately a third of a small number of hypercholesterolemic persons examined for hyperuricemia, the uric acid value was elevated above 6 mg. per hundred cubic centimeters.

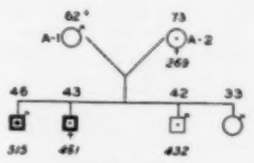

Fig. 10

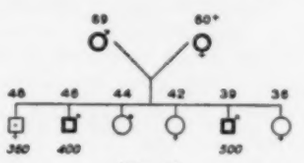

Fig. 11

Fig. 10.—Three of 4 siblings exhibiting hypercholesterolemia, 2 of whom have coronary artery disease and 1 xanthoma. Living parent has serum cholesterol considered to be normal (269 mg. per hundred cubic centimeters). See text for explanation of this exceptional observation.

Fig. 11.—High frequency of coronary artery disease in family in which several members exhibit hypercholesterolemia.

Similar observations have also been reported recently by others.[19] Detailed discussion of the many additional factors involved in the genesis of arteriosclerosis will be found in extensive reviews by Hueper [20] and Katz and Dauber [21] and in the recent summarization of the problem by Gubner and Ungerleider.[22]

SUMMARY

Thirty-five families with xanthoma comprising 172 members and an additional 29 persons known to belong to such families (total 201 persons) were investigated for hypercholesterolemia, coronary artery disease and other stigmas commonly found in this disorder. Serum cholesterol was determined in 175 of the 201 subjects and found elevated above 300 mg. per hundred cubic centimeters in 122 (69 per cent). Coronary artery disease was found in 80 patients of the entire series. Serum cholesterol was determined in 66 of these 80 patients and found elevated above 300 mg. in 57.

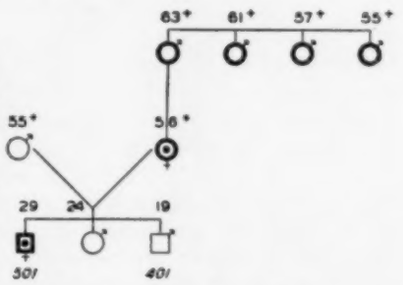

Fig. 12. — High frequency of coronary artery disease in xanthomatous family.

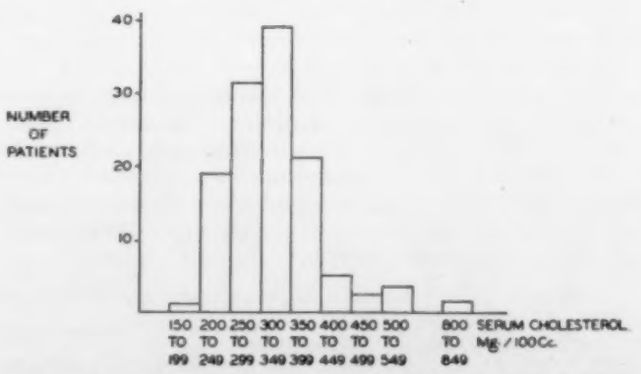

Fig. 13.—Distribution of serum cholesterol values among 122 patients with proved coronary artery disease.

15. Dock, W., cited by Gubner, R., and Ungerleider, H. E.[22]

16. Snapper, I.: Chinese Lessons to Western Medicine: A Contribution to Geographical Medicine from the Clinics of Peiping Union Medical College, New York, New York, Interscience Publishers, Inc., 1941.

17. Aschoff, L.: Lectures on Pathology, New York, Paul B. Hoeber, 1924.

18. Anitschkow, N., in Cowdry, E. V.: Arteriosclerosis: A Survey of the Problem, New York, The Macmillan Company, 1933, p. 309.

19. Gertler, M. M.: Some Morphological, Hormonal and Biochemical Aspects of the Young Coronary Patient, read before the New York Heart Association, New York, Feb. 23, 1949.

(Footnotes continued on next page)

Cardiac symptoms developed before age 50 in 49 patients. Among the 172 members comprising the thirty-five families, 54 had coronary artery disease and the serum cholesterol was elevated in 38 of the 40 in whom it was determined. Among the 201 persons comprising the total series, xanthelasma was present in 61. Tuberous or tendinous xanthoma was observed in 25 persons, all of whom had hypercholesterolemia; corneal arcus occurred in 35. Genetic analysis of the families supports the concept that this disturbance of cholesterol metabolism is inherited as an "incomplete" dominant trait.

The results obtained in the study of xanthomatous families were compared with those of a previous investigation in which 122 patients with proved disease of the coronary arteries, unselected except as to age (under 50 years) were examined for the presence or absence of elevated serum cholesterol and stigmas associated with it. Seventy-one (58 per cent) had hypercholesterolemia. In addition, fifty families of these 122 patients were studied. In fifteen families all or most siblings exhibited hypercholesterolemia, as did one half of the siblings in nine other families. Many siblings also exhibited corneal arcus and xanthelasma; a few, xanthoma. Genetic analysis of these sibships[6] reveals that the number affected with hypercholesterolemia fits a 1:1 mendelian ratio and that hereditary transmission, probably as a dominant trait, is responsible for the distribution of hypercholesterolemia.

When results obtained in both studies are considered together, it appears that the common factor for most patients with coronary atherosclerosis may be a hereditary disturbance of cholesterol metabolism manifested by elevated serum cholesterol. Familial xanthomatosis is the severest form of the inherited disturbance. Xanthoma lesions develop only in patients who carry two abnormal genes for cholesterol; that is, they are homozygotes. Atherosclerosis is frequent in such persons. Many patients with uncomplicated coronary artery disease are probably affected with a milder form of disturbed lipid metabolism. They carry one abnormal gene for cholesterol; that is, they are heterozygotes. Derangement of cholesterol metabolism helps explain the familial incidence of coronary artery disease and also accounts in part for its development in many persons under 50 years of age.

The serum cholesterol of all relatively young patients affected with coronary atherosclerosis should be determined as the initial step in uncovering hypercholesterolemia in members of their immediate family. Those whose cholesterol level is found to be elevated should be examined for latent cardiovascular disease and should be kept under permanent medical supervision.

20. Hueper, W. C.: Arteriosclerosis, Arch. Path. **39**:187 (March) 1945.
21. Katz, L. N., and Dauber, D. V.: Pathogenesis of Atherosclerosis, J. Mt. Sinai Hosp. **12**: 362 (May-June) 1945.
22. Gubner, R., and Ungerleider, H. E.: Arteriosclerosis: A Statement of the Problem, Am. J. Med. **6**: 60 (Jan.) 1949.

Army Surgeon Brought Vaccination to United States.—In 1800, Benjamin Waterhouse, an Army surgeon, brought vaccination to the United States. Impressed by reports from Europe, he procured a small supply of smallpox vaccine from England and used it on seven people, including his own children. They proved immune, and from that small beginning grew the widespread practice of vaccination which has practically removed this once-dread disease from America.—Release, Surgeon's General Office, July 1, 1949.

CANCER OF THE BILIARY TRACT AND PANCREAS

Diagnosis from Cytology of Duodenal Aspirations

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and
WALTER W. BYRNES, M.D.
Boston

Primary cancers of the liver, extrahepatic bile ducts and pancreas comprise an important group of human neoplasms totalling between 5 and 10 per cent of all carcinomas. The hopeless prognosis of malignant growths in these areas may in part be explained by our clinical inability to recognize these cases at a sufficiently early stage for successful surgical therapy. Amelioration of cancer mortality from these tumors in large measure rests with the family physician and internist, who at present fail to diagnose the disease in two thirds to four fifths of these patients antemortem.[1]

With the recent revival of interest in cytologic diagnosis of cancer, it seemed possible that the technic of staining exfoliated epithelial cells in duodenal aspirations might contribute information that would be of assistance in the recognition of neoplasms arising from the epithelial surfaces of the exocrine portion of the pancreas, the extrahepatic and intrahepatic radicles of the biliary tract, the gallbladder and possibly in the liver itself. It was surprising that none of the prior students of duodenal secretion, such as Bockus[2] and Lyon,[3] had made any observations on the presence of neoplastic epithelial cells in biliary drainages, although the latter reported finding cancer cells in the gastric juice as far back as 1923. The fact that smears of exfoliated cells offer the only laboratory test short of biopsy which may indicate the presence of localized early cancer, so-called "carcinoma in situ," was most encouraging to our endeavor,[4] as was the simplicity and wide applicability of the method of duodenal drainage in clinical practice.

METHOD

The patients chosen for study included chiefly those with jaundice of obscure causation observed on the wards of the Massachusetts Memorial and Boston City hospitals during the past two years. Observations made in cancer patients have been controlled by similar tests of a much larger series of patients with inflammatory disease of the liver, biliary tract and pancreas and by careful cytologic comparison of positive smears with corresponding pathologic sections of the tumor itself. In three quarters of the cases of cancer the diagnosis has been verified pathologically, as it has in over one third of the controls; the remainder of the patients have been followed for three to eighteen months, or until death, in order to be reasonably sure of the clinical diagnosis.

Read before the American Society for Clinical Investigation, Atlantic City, New Jersey, May 2, 1949.
This investigation has been supported in part by a teaching grant from the United States Public Health Service.
From the Department of Medicine, Boston University School of Medicine, the Evans Memorial and Massachusetts Memorial Hospitals, and the Fifth and Sixth (Boston University) Medical Services, Boston City Hospital.

1. Willis, R. A.: Pathology of Tumours, St. Louis, C. V. Mosby Company, 1948, p. 71.
2. Bockus, H. L., and others: Gastro-Enterology, Philadelphia, W. B. Saunders Company, 1946, vol. 3, chap. 98.
3. Lyon, B. B. V.: Non-Surgical Drainage of the Gall Tract, Philadelphia, Lea & Febiger, 1923.
4. Pund, E. R.; Neiburgs, H. E.; Mettles, J. B., and Caldwell, J. D.: Pre-Invasive Carcinoma of the Cervix Uteri: Seven Cases in Which It Was Detected by Examination of Routine Endocervical Smears, Arch Path. **44**: 571-577 (Dec.) 1947.

The method of obtaining duodenal contents follows widely accepted methods of duodenal intubation, using either a Levin or a Rehfuss tube. The flow of bile and pancreatic juice has in many cases been stimulated with administration of a 33.3 per cent solution of magnesium sulfate, secretin or methacholine chloride, but this is not imperative for success. The tube should not be lubricated with oil at any time. Fluoroscopy has been used in most instances to determine the location of the tip of the tube. Specimens of fasting gastric juice and A, B and C bile are separately collected in receptacles chilled in an ice bath. The fluid is promptly neutralized to p_H 7 and centrifuged at 1,800 revolutions per minute for ten minutes. The sediment from specimens containing as little as 2 to 3 cc. of secretion may be used for making smears on a similar number of slides, although usually one to three slides are made from every 15 cc. of fluid obtained. The smears of the sediment are then fixed while moist for at least one-half hour in chilled acetone, after which they are dipped twice in a 1 per cent solution of celloidin in acetone, allowed to drain ten to fifteen seconds in air and then are transferred to 95 per cent alcohol . This celloidin jacket is necessary to insure good adhesion of the smeared cells to the slides during the staining process, which is carried out using the method described by Papanicolaou.[5]

RESULTS

Normally, the duodenal sediment contains few cells and little mucus. Inflammatory disease or calculi in the biliary tract are indicated by the presence of pus cells,

Fig. 1.—Normal low columnar epithelial cells found in profusion in the duodenal sediment from patient with advanced Laennec's cirrhosis (biopsy) and acute hemorrhagic pancreatitis (autopsy). The smear was interpreted as showing inflammatory disease only (× 700).

macrophages, segments of normal columnar epithelium [6] and abnormal crystals or pigments. Cholesterol and calcium bilirubinate crystals may at times be preserved in the stained smears. In the majority of our specimens from cancer patients, groups of neoplastic cells were recovered, usually in company with normal columnar epithelial cells, permitting careful and accurate comparison of the two types of cells. The malignant cells for the most part closely resembled the type B cells described by Caspersson as characteristic of many cancers and absent in normal tissues.[7] These cells were

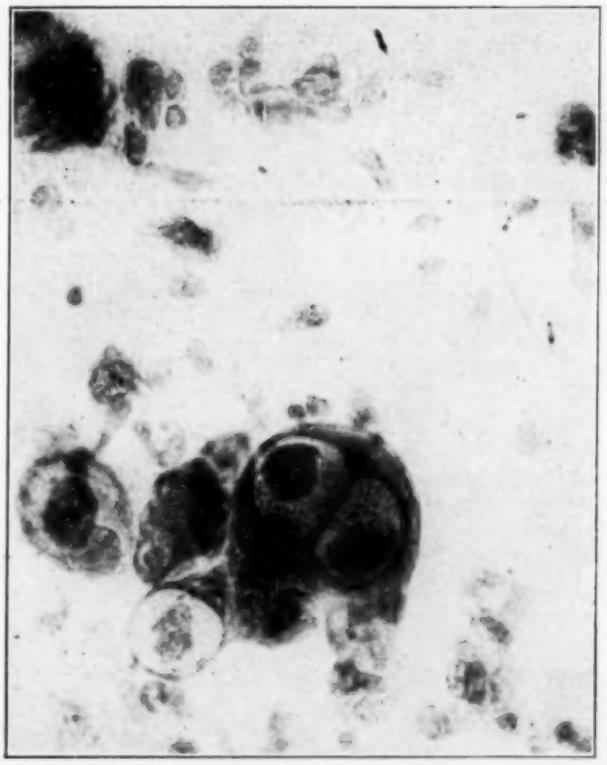

Fig. 2.—One of many clumps of neoplastic cells surrounded by tall columnar normal epithelial cells, found in duodenal sediment of patient with carcinoma of head of pancreas, pathologically reported as resembling hepatoma (× 800).

not arranged like normal columnar cells in pavement mosaics a single cell layer in thickness (fig. 1). Their nuclei varied widely from cell to cell in size, shape and staining properties and usually were considerably increased in size, with a relative increase in the ratio of nucleus to cytoplasm. Large nucleoli were frequently present, along with wrinkling of the nuclear membrane. The cytoplasm was unusually basophilic in most instances, and it displayed characteristic vacuolization in some cases; in others there was phagocytosis of adjacent malignant cells. As a rule, mitotic figures were not seen (fig. 2). Although we have not been able to ascertain the origin or type of the tumor from the appearance of these cells, thus far their morphologic counterpart has been present in the biopsy or autopsy sections of the cancer in every case in which comparison has been possible (fig. 3). The prevalence of two distinct epithelial cell types, one normal and one abnormal, in every slide from a case, has proved to be our most reliable guide in cytodiagnosis of neoplastic disease (fig. 2).

Data on 58 patients, including 20 with cancer in various portions of the liver, biliary tract and pancreas, have now been analyzed. Less than 5 per cent of all duodenal drainages have been found to be inadequate

5. Papanicolaou, G. N.: New Procedure for Staining Vaginal Smears, Science **95**: 438-439, 1942.
6. Bockus and others.[2] Lyon.[3]
7. Caspersson, T., and Santesson, L.: Studies on Protein Metabolism in the Cells of Epithelial Tumours, Acta radiol., 1942, supp. 46.

for diagnosis, or unsatisfactory for other technical reasons, with the foregoing procedure. Hence, in most cases only a single drainage has been necessary. This has been true even when it was not possible to obtain the various fractions of bile separately, when there was complete biliary obstruction by tumor and in several cases when the surface area from which exfoliation of tumor cells occurred was less than 2.5 cm. in diameter. The accuracy of diagnosis of cancer from cytologic examination of duodenal sediment is illustrated in figures 4 and 5. No false positive observations have been made, and in the majority of cancer diagnoses an affirmative rather than a questionable diagnosis has been possible. Nearly all smears were examined in the complete absence of any clinical information concerning the patient, and reports were made prior to any further inquiry.

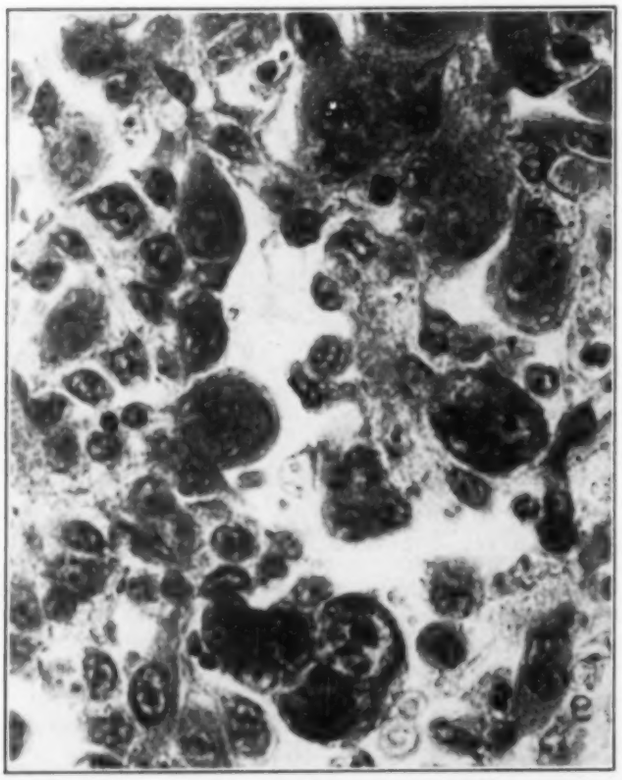

Fig. 3 (same case as fig. 2).—Typical section of biopsy of cancer of the head of the pancreas, showing similarity in appearance of cells proliferating within the tumor to those exfoliating into duodenal secretion (× 800).

In 16 cases of cancer proved pathologically in this series, the disease in 11 was suspected or diagnosed from cytology of the duodenal aspirations. These cases have included two hepatomas, one adenocarcinoma of the gallbladder, one carcinoma of the common bile duct, one carcinoma of the ampulla of Vater, three carcinomas of the head of the pancreas, one carcinoma of the body and tail of the pancreas, and one case of carcinoma metastatic to the liver and pancreas. Both hepatomas which yielded positive smears had metastasized, one within the common bile duct and the other to the head of the pancreas. The eleventh cancer diagnosed was in a person being treated for infectious hepatitis and duodenal ulcer (shown by roentgenogram); he was studied as a control, and it was found that the tube could not be passed into the duodenum. Smears of the gastric juice revealed neoplastic cells originating from what later was found to be a huge, ulcerating, obstructing cancer, involving the lower half of the stomach and most of the pancreas.

The missed cases in which pathologic proof of cancer existed included one hepatoma without metastases to the area of the porta hepatis, one carcinoma of the body of the pancreas and two carcinomas metastatic

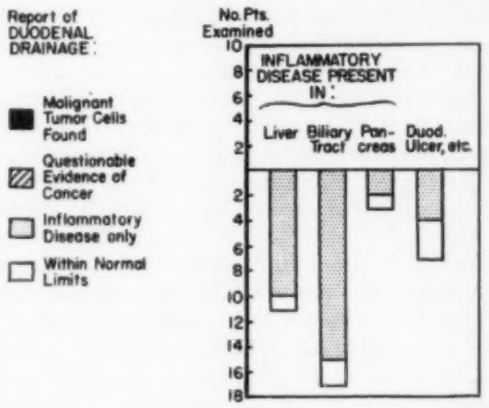

Fig. 4.—Accuracy of interpretation of duodenal cytology in 38 control patients with nonmalignant disease.

in the liver, in one of which the primary lesion remained in the stomach. One carcinoma of the head of the pancreas was missed because of a wholly unsatisfactory smear, which contained no cells of any sort; most of the sediment apparently washed off the slide during staining, probably as a result of contamination with oil. There were 2 additional cases with clinical diagnosis of cancer of the biliary tract, without pathologic verification, in which suspicious or positive smears were obtained. Both these patients died within six months of observation with a progressive clinical picture consistent with their discharge diagnosis of cancer of the biliary tract. Of 9 proved cancers, primary in epithelial surfaces of the extraheaptic biliary tract or pancreas, 7 had been indicated by the smears.

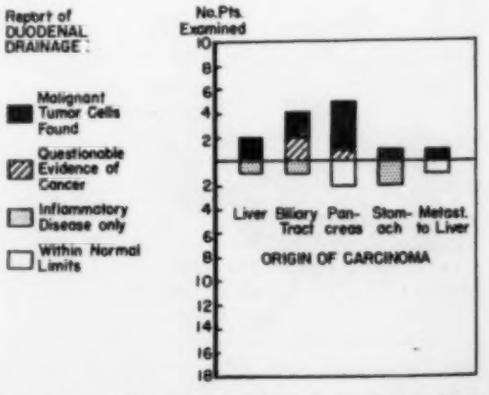

Fig. 5.—Accuracy of interpretation of duodenal cytology in 20 patients with cancer.

In one quarter of the control cases there was a strong clinical impression of cancer, at the time of duodenal intubation, that was not borne out either by smears or by the subsequent course of the patient. In most of these, the smears gave good evidence of calculi or inflammatory disease. One patient obtained relief of her symptoms seven months later by passing a large gallstone per anus, and others were shown to have

inflammatory lesions by operation, liver biopsy or autopsy. The smallest cancer detected was a papillary adenocarcinoma of the common bile duct 2 cm. in diameter, which, unfortunately, was inoperable because of local peritoneal recurrence of an earlier primary tumor of the colon. All patients with positive smears in this series of hospitalized cases died of their disease within six months, emphasizing the need of applying this method of diagnosis to those whose disease is in earlier stages. Examination of these smears has been sufficiently easy to enable second year medical students to identify malignant cells after two hours of instruction.

Our study, therefore, indicates that the clinical value of this test will depend on the extent to which it is utilized as a diagnostic office procedure soon after onset of symptoms, rather than as a confirmatory measure of advanced and hopeless disease in hospitalized patients, to which our efforts so far have been limited. It must be remembered that up to 75 per cent of patients with cancers of the biliary tract and pancreas have early symptoms of upper abdominal pain for which they seek medical care.[8] Since this test is as yet the only method of obtaining histologic proof of these tumors short of exploratory laparotomy, it would seem reasonable that the indications for duodenal drainage be broadened to include all patients for whom an upper gastrointestinal roentgen ray study is recommended and in whom the diagnosis has not been settled by the roentgenologic procedure. In addition, since the procedure is fraught with little hazard or discomfort, it should be carried out on every jaundiced patient within the first forty-eight hours of disease. Bleeding esophageal varices and acute cholecystitis appear to be the chief contraindications. Smears should be made of the sediment of all biliary drainages and stained by Papanicolaou's method, because routine observation of the cytology of duodenal contents would appear from the results of our study to contribute considerably to the value of this widely used diagnostic aid. This method appears to be sufficiently sensitive for detection of many early carcinomas in this as in other regions of the body.

CONCLUSION

Cytologic examination of the sediments of duodenal aspiration appears to be a valuable indication of tumors primary in the glandular epithelium of gallbladder, extrahepatic bile ducts and pancreas. Examination of exfoliated epithelial cells should become a routine procedure on all duodenal drainages. Cytologic examination of duodenal secretion provides the most hopeful technic yet described for early detection of this group of otherwise obscure and inaccessible malignant tumors, which account annually for at least 10,000 deaths in the United States.

ADDENDUM

Two additional cases in which pancreatic carcinoma was diagnosed preoperatively by exfoliated cancer cells in duodenal drainage have recently been reported from Memorial Hospital, New York, by McNeer and Ewing.[9]

8. Ingelfinger, F. J.: The Diagnosis of Cancer of the Pancreas, New England J. Med. **235**: 653-661, 1946. Kirshbaum, J. D., and Kozoll, D. D.: Carcinoma of the Gallbladder and Extra-Hepatic Bile Ducts: A Clinical and Pathological Study of One Hundred and Seventeen Cases in 13,330 Necropsies, Surg., Gynec. & Obst. **73**: 740-754, 1941.

9. McNeer, G., and Ewing, J. H.: Exfoliated Pancreatic Cancer Cells in Duodenal Drainage: A Case Report, Cancer **2**: 643-645 (July) 1949.

VITAMIN B_{12} AND COORDINATION EXERCISES FOR COMBINED DEGENERATION OF THE SPINAL CORD IN PERNICIOUS ANEMIA

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and
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Pernicious anemia, first described by Combe[1] in 1824, was not recognized as a clinical entity until Addison's reports[2] appeared in 1849 and 1855. It invariably terminated fatally until the epochal discovery of Minot and Murphy[3] in 1926 that the oral administration of liver was effective in controlling the anemia and certain other clinical manifestations of the disease. Neurologic manifestations, however, were not well controlled by oral therapy. Later, extracts of liver were introduced which could be administered parenterally. These yielded far better clinical and hemopoietic responses. Progression of neurologic manifestations was prevented, and in cases in which neurologic involvement was of recent onset improvement frequently occurred.

Search for the active factor or factors in liver that possessed anti-pernicious-anemia properties resulted in the discoveries of folic acid in 1945 and of vitamin B_{12} in 1948. While folic acid elicited hemopoietic responses in patients with pernicious anemia in relapse, it did not prevent neurologic manifestations from developing. Studies with vitamin B_{12}, on the other hand, have shown that this substance not only induces optimal hemopoietic responses but also controls the gastrointestinal and neurologic manifestations of the disease.

TECHNIC FOR ADMINISTERING VITAMIN B_{12}

Vitamin B_{12} is a red crystalline compound that contains cobalt, an important trace element in human nutrition. It is administered parenterally in saline solution[4] and is active in microgram quantities, 1.0 microgram being approximately the equivalent of 1.0 U. S. P. unit of liver extract. When given by mouth, vitamin B_{12} is not absorbed readily unless a gastric (intrinsic) factor is supplied also.[5] In treatment of patients with pernicious anemia and peripheral neuritis or subacute combined degeneration of the spinal cord, large doses of vitamin B_{12} should be administered parenterally. Ten micrograms should be injected intramuscularly daily or every second day for three to six months; then maintenance doses of 10 to 20 micrograms should be employed each

From the Division of Medicine (Dr. Hall), the Section on Physical Medicine (Dr. Krusen) and the Department of Neurology and Psychiatry (Dr. Woltman), Mayo Clinic.

Read before the Section on Miscellaneous Topics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

1. Combe, J. S.: Case Report, Tr. Med.-Chir. Soc. Edinburgh **1**: 194-204, 1824.

2. Addison, T.: Anaemia: Disease of the Supra-Renal Capsules, London M. Gaz. **43**: 517-518, 1849; On the Constitutional and Local Effects of Disease of the Supra-Renal Capsules, London, S. Highley, 1855.

3. Minot, G. R., and Murphy, W. P.: Treatment of Pernicious Anemia by a Special Diet, J. A. M. A. **87**: 470-476 (Aug. 14) 1926.

4. Berk, L.; Denny-Brown, D.; Finland, M., and Castle, W. B.: Effectiveness of Vitamin B_{12} in Combined System Disease; Rapid Regression of Neurologic Manifestations and Absence of Allergic Reactions in a Patient Sensitive to Injectable Liver Extracts, New England J. Med. **239**: 328-330 (Aug. 26) 1948. Hall, B. E., and Campbell, D. C.: Vitamin B_{12} Therapy in Pernicious Anemia: I. Effect on Hematopoietic System; Preliminary Report, Proc. Staff Meet., Mayo Clinic. **23**: 584-590 (Dec. 8) 1948.

5. Berk, L.; Castle, W. B.; Welch, A. D.; Heinle, R. W.; Anker, R., and Epstein, M.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia: X. Activity of Vitamin B_{12} as Food (Extrinsic) Factor, New England J. Med. **239**: 911-913 (Dec. 9) 1948. Hall, B. E.; Morgan, E. H., and Campbell, D. C.: Oral Administration of Vitamin B_{12} in Pernicious Anemia: I. Presence of Intrinsic Factor in Berkefeld-filtered Pooled Human Gastric Juice: Preliminary Report, Proc. Staff Meet., Mayo Clin. **24**: 99-107 (Feb. 16) 1949.

week. These doses are in excess of those needed by patients who have pernicious anemia without involvement of the nervous system, but it is perhaps better to err on the side of large dosage in these cases. It is possible that doses even larger than those we have mentioned will prove to be more effective.

COORDINATION EXERCISES

Coordination exercises for combined degeneration of the spinal cord are not new. William P. Murphy presented motion pictures of exercises, somewhat similar to the ones which we employ, before a session of the American Medical Association over a decade ago.

Properly directed coordination exercises serve as an important motivating force in hastening recovery and rehabilitating patients who may have been disabled for some time. More than this, the exercises actually assist coordination and restore strength of muscles which may not have functioned properly since the neurodegenerative changes of pernicious anemia first manifested themselves.

In order to satisfy ourselves concerning the effect of the coordination exercises alone, in 1 patient we withheld the vitamin B_{12} therapy for ten days and used the exercises only. There was distinct evidence of improved coordination, even though we knew that there had been no arrest or reversal of the neurodegenerative changes. When vitamin B_{12} was finally added to the therapeutic regimen, the patient, as we expected, made even more rapid progress. Nevertheless, we had satisfied ourselves that the exercises of themselves contributed toward the improvement we noted in all cases.

One of the early coordination exercises for subacute combined degeneration of the spinal cord. The heel is placed at various points on the opposite leg.

The simple arrest or reversal of the neurodegenerative changes by the administration of vitamin B_{12} without the use of a well directed exercise program will not accomplish return toward normal coordination and function of the extremities as rapidly as when the exercises are added. This is particularly true in the cases of more advanced changes in which there is both incoordination and muscular weakness.

The exercises which we employ are carefully graduated. They start with the patient in the recumbent position, become gradually more complex and progress to exercises given in the sitting and finally in the erect position.

The exercises, given with the patient recumbent, start with slow rhythmic sliding movements of one leg and then both legs in flexion and extension. As the patient improves, these motions are started and stopped at command. Later the heel is lifted and, instead of sliding, the leg is balanced and moved in free space. Next, first one heel and then the other is placed in various positions on the opposite leg (the figure).

The coordination exercises gradually are made increasingly complex. Abduction and adduction are added. Exercises requiring maximal coordination with minimal muscular contraction are given. The patient is required to study the tactile impressions produced by certain movements. Movements of both limbs together are followed by alternate movements of the legs. Finally the patient attempts to follow someone's finger or cupped hand with his heel.

All exercises are prescribed specifically. Each one is repeated no more than four times every three hours. These patients tend to lose the sense of fatigue, and consequently it is important to prevent them from overexercising.

Later, patients are given exercises while in the sitting position and are taught how to sit down and how to get up from a chair. Unless corrected, such patients tend simply to let themselves fall into the chair. On rising, they may not be able to balance on the toes; therefore the body must be bent forward to throw the center of gravity over the heels.

Still later, walking exercises are begun, first sideways (because this is easier) and then forward, at first with a cane and later without one. The patient tends at first to walk too fast, and this tendency must be corrected.

If the patient has had considerable weakness of the muscles, we sometimes add resistive exercises utilizing sandbags or graduated weights, to increase muscular strength. These heavy resistance exercises are especially useful in producing muscular hypertrophy. We recall 1 patient, a farmer, who was given liver therapy and coordination exercises after prolonged disability and a long period of chair existence. He had vegetated for so long that he was extremely weak. It seemed advisable, therefore, to add strengthening exercises. After a program of both coordination and heavy resistance exercises in conjunction with the liver therapy, he now walks all over his farm, and his family's chief complaint is that he is too active.

Despite Murphy's advocacy of therapeutic exercise in conjunction with liver therapy, recently some physicians seem to have overlooked this valuable aid to prompt recovery following the administration of agents which produce adequate hemopoietic responses in combined degeneration of the spinal cord in pernicious anemia.

It seems evident that vitamin B_{12} produces optimal hemopoietic response and maximal arrest or reversal of neurodegenerative changes in pernicious anemia. When a suitable regimen of therapeutic exercises is added, disappearance of muscular incoordination and return toward normal muscular function are accelerated. Thus, maximal recovery in a minimal length of time is achieved.

NEUROLOGIC CHANGES

Lichtheim [6] first sensed the accepted relation between pernicious anemia and neurodegenerative changes. One of us (H. W. W.)[7] reported before 1926 that of 100

6. Lichtheim: Zur Kenntniss der perniciösen Anämie, Verhandl. d. deutsch. Kong. f. inn. Med. **6**: 84-96, 1887.

7. Woltman, H. W.: The Nervous Symptoms in Pernicious Anemia: an Analysis of One Hundred and Fifty Cases, Am. J. M. Sc. **157**: 400-409 (March) 1919.

patients with pernicious anemia 80.6 per cent had neuropathy. Evolving foci are seen best in the brain, where they appear around blood vessels. Both myelin sheath and axon suffer. Fusion of plaques and secondary degeneration rapidly produce the characteristic myelopathy. As shown by Hamilton and Nixon,[8] peripheral nerves do not escape.

Before treatment with liver was begun, the earliest neurologic symptom mentioned by 80 per cent of patients with pernicious anemia was persistent paresthesia, beginning in the hands and feet. An ataxic gait occurred in 20.8 per cent of cases. The gait was spastic in 8 per cent, but usually spasticity was combined with ataxia. Incoordination in movements of the lower extremities was demonstrated by the heel-knee-toe test in 55.2 per cent of cases.

The most characteristic finding on examination was dissociated impairment of vibratory sensibility, which was present in 82.4 per cent of cases of pernicious anemia before liver therapy was available. The quadriceps reflex was increased in 39.2 per cent and was absent in 7.2 per cent. The triceps surae reflexes, like the quadriceps reflexes, may be increased, diminished, absent or unequal. Ankle clonus was present in 4.8 per cent of cases. Babinski's sign was positive in 26.4 per cent. Mild mental changes occurred in 35.2 per cent; severe psychosis, in 0.8 per cent.

These findings indicate extensive involvement of the nervous system. If treatment is begun early, the changes in the nervous system are reversible; but after axis-cylinders within the brain or spinal cord have been destroyed, their function cannot be restored. Hence, energetic treatment with liver extract or vitamin B_{12} should be started without delay.

Subacute Combined Degeneration of Spinal Cord in Pernicious Anemia: 12 Patients Treated with Vitamin B_{12}

Neurologic Manifestation	Incidence Before Treatment, No. of Patients	Return Essentially to Normal		Improvement		No Improvement	
		No. of Patients	Period of Treatment, Months	No. of Patients	Period of Treatment, Months	No. of Patients	Period of Treatment, Months
Paresthesia							
Upper limbs	9	5	1 to 3	4	1 to 5½	0	..
Lower limbs	12	2	3½ to 5	10	3 wk. to 7	0	..
Ataxia	11	9	1 to 5½	2	1 to 4½	0	..
Romberg's sign	10	6	1 to 7	4	1 to 4½	0	..
Vibration sense, lower limbs	12	1	9	7	1 to 7	4	1 to 7
Position sense, toes	10	4	1 to 9	5	1½ to 4½	1	1
Heel-knee-toe test	11	8	3 wk. to 3½ mo.	3	1 to 4½	0	..
Quadriceps femoris reflex	12	2	1½ to 9	4	1 to 5½	6	1 to 9
Triceps surae reflex	11	2	1 to 9	2	4½ to 5½	7	1 to 7
Babinski's reflex	5	4	3 wk. to 9 mo.	1	1	0	..
Clonus	1	1	8 days	0	.....	0	..

RESULTS

Twelve patients having subacute combined degeneration of the spinal cord associated with pernicious anemia were given combined parenteral administration of vitamin B_{12} and coordination exercises. The incidence of paresthesia of the upper or lower limbs, ataxia, Romberg's sign, vibration sense of lower limbs and position sense of toes was observed before and during treatment (the table).

Paresthesia of the upper limbs was present in 9 of the 12 patients. In 5, essentially normal conditions returned in one to three months. The other 4 showed improvement in one to five and a half months. None was unimproved.

Paresthesia of the lower limbs was present in all 12 patients. The condition of 2 of these returned essentially to normal in three and a half to five months of the treatment. The other 10 were improved in three weeks to seven months. None was unimproved.

Ataxia was present in 11 patients. In 9 of these, essentially normal conditions returned in one to five and a half months. Two were improved in one to four and a half months. None was unimproved.

Romberg's sign was positive in 10 of our patients. Six showed return essentially to normal in one to seven months. Four were improved in one to four and a half months. None was unimproved.

Vibration sense of lower limbs was impaired in all 12 patients. One showed return essentially to normal in nine months. Seven were improved in one to seven months. Four were unimproved after one to seven months of treatment.

Position sense of the toes was impaired in 10 cases. Four of these showed return essentially to normal in one to nine months. Three were improved in one and a half to four and a half months. One was unimproved after one month.

The heel-knee-toe test and tests of quadriceps femoris reflex, triceps surae reflex and Babinski's reflex and for ankle clonus were performed in all 12 cases (the table). Eleven of the 12 patients performed the heel-knee-toe test poorly before treatment. Eight exhibited a return to essentially normal conditions in three weeks to three and a half months of treatment. Three were improved in one to four and a half months. None was unimproved.

The quadriceps femoris reflex was abnormal in all 12 patients. In 2 patients it returned essentially to normal in one and a half to nine months. Four were improved in one to five and a half months, but 6 showed no improvement after one to nine months.

The triceps surae reflex was abnormal in 11 patients. In 2 of these it returned essentially to normal in one to nine months of treatment. In 2 it was improved in four and a half to five and a half months. In 7, however, no improvement occurred in one to seven months. It is apparent that these muscular reflexes are the least reversible, but in each instance 2 patients exhibited return essentially to normal.

The Babinski reflex was positive in 5 of the patients. It returned essentially to normal in 4 of these within three weeks to nine months of treatment. One patient was improved after one month of treatment. None was unimproved.

Clonus was present in 1 patient but disappeared after eight days of treatment.

COMMENT

Our study indicates that subacute combined degeneration of the spinal cord associated with pernicious anemia is reversible if intensive treatment is instituted early, before axis-cylinders have been destroyed. Early

8. Hamilton, A. S., and Nixon, C. E.: Sensory Changes in the Subacute Combined Degeneration of Pernicious Anemia, Arch. Neurol. & Psychiat. 6: 1-31 (July) 1921.

diagnosis, therefore, is essential. Treatment consists in parenteral administration of liver extracts or vitamin B_{12} and daily use of coordination exercises. Prompt, energetic and unremitting treatment is imperative.

ABSTRACT OF DISCUSSION

DR. BYRON E. HALL, Rochester, Minn.: My co-workers and I feel that vitamin B_{12} in all probability is the active substance in liver extract. Moreover, its action on the regeneration of the nerve fiber seems to be fairly specific. Therefore, it should not be necessary to supplement the administration of vitamin B_{12} with liver extract. It is possible that other factors, at present unknown, are important in the regeneration of nerve fibers. In our movie we have attempted to show that decided improvement in the neurologic manifestations of pernicious anemia occurs after intensive treatment with vitamin B_{12} alone, provided the diagnosis is made before the neurodegenerative changes are far advanced and treatment is instituted promptly.

DR. GUSTA DAVIDSOHN, Chicago: I know of a patient, a woman about 80 years old, who has pernicious anemia, and she has combined degeneration. She was given vitamin B_{12} without liver. Within two weeks she had paresthesia again and burning sensation of the tongue. Dr. Krusen, you spoke of vitamin B_{12} or liver, from which I infer that if you give a patient vitamin B_{12} you refrain from giving liver extract.

DR. FRANK H. KRUSEN: That is correct.

USE OF HISTAMINE IN A RETARDING MENSTRUUM IN PERIPHERAL VASCULAR DISEASE

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S. FELDMAN, M.D.
and
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Wirtschafter and Widmann [1] reported the parenteral use of histidine, sodium ascorbate and ascorbic acid in the treatment of peripheral vascular diseases. They stressed the rapidity of action of this medication in relief of pain in thromboangiitis obliterans, arteriosclerosis obliterans, and diabetic gangrene of the extremities. The effective agent was histamine, which was formed in vivo by the decarboxylation of histidine. In order to obviate the necessity of repeated injections of these substances, we decided to employ histamine in a retarding menstruum. When histamine is injected in man, it acts as a vasodilator of the capillaries and arterioles.

The preparation of the menstruum was essentially that advocated by Code and Varco,[2] with slight modifications. Our best and most widely used mixture contains 3 per cent yellow wax in sesame oil.[3] Each cubic centimeter of menstruum contains 0.5 mg. of histamine base, as the diphosphate. The effect of retarded absorption of histamine from this mixture is well illustrated in guinea pigs. If 0.25 mg. of aqueous histamine base, as the diphosphate, is injected into a guinea pig the animal may succumb within an hour. An equal amount of histamine in the sesame oil–beeswax base delays the appearance of symptoms for seven hours. Similar results were obtained in 6 other animals when the concentration of histamine base was 0.125 mg. per cubic centimeter. A total of 10 guinea pigs were used with a consistent picture of delayed and minimal reaction with the sesame oil–beeswax mixture as compared to water menstruum. Care must be used to employ a dry syringe and needle, because water will wash out the histamine from the retarding menstruum.

The effective therapeutic results obtained with histamine in peripheral vascular diseases was emphasized by Mufson, Quimby and Smith.[4] They claimed that the intra-arterial route of administration is most preferable because of the rapidity with which the drug is inactivated by body enzymes when other routes are used.

METHOD OF STUDY

This report is concerned with a group of 93 patients with peripheral vascular disorders. Some have been under our observation for twenty-six months or more. Thermometric and oscillometric readings were obtained before and during therapy in nearly all cases. Relevant laboratory examinations and a careful history regarding the patient's current capacity to walk and carry on his everyday activities, as well as the routine physical examinations, were done in all cases.

In 32 cases paravertebral block (10 cc. of 1 per cent solution procaine hydrochloride at each level) was performed prior to the histamine injections. The responses to both procedures were used in comparing the rise and duration of skin temperature. A period of ten to fifteen days elapsed between comparative tests.

Fractional gastric analyses were completed for 19 patients at various intervals during the course of therapy. We were interested in determining any possible harmful effects that might arise from a constant stimulation of secretion of hydrochloric acid by the gastric mucosa.

TYPES OF CASES AND TREATMENT

Except in cases of bronchial asthma, cardiac asthma and other pulmonary complications, histamine in the retarding menstruum was used freely. Patients were given 1 cc. of the drug daily, and frequently 2 cc. a day. Hypertension, food allergies and some minor dermopathies were no contraindication to the use of the drug. However, a dry syringe and 22 gage needle were used. A moist syringe or needle destroys the prolonged absorption of the drug.

In table 1 are shown the types of cases that came under observation during this period of study.

Thromboangiitis Obliterans.—Of the 13 cases studied, 7 patients with thromboangiitis obliterans had involvement of both limbs and 6 of only one limb. No metabolic disorders were observed in this group. Ten of the 13 patients had moderate hypertension. In this group, 2 had a history of precordial pain, without electrocardiographic changes. Twelve of the 13 subjects are still tobacco consumers.

After the diagnosis was established, 1 cc. of histamine in the retarding menstruum was injected into the patient intragluteally each day. In 3 subjects, relief was obtained from intermittent claudication after the fourth day of therapy. The average course lasted twenty-two days, but some patients were maintained steadily on the histamine regimen for five weeks. All 13 had undergone treatment in various clinics, some for twenty years. In table 2 is given the result of therapy with histamine in thromboangiitis obliterans.

From Beth-El Hospital and Kings County Hospital, surgical service of Dr. George G. Dixon.

1. Wirtschafter, Z. T., and Widmann, R.: The Elaboration of Histamine, J. A. M. A. **133**: 604 (March 1) 1947.
2. Code, C. F., and Varco, R. L.: Prolonged Action of Histamine, Am. J. Physiol. **137**: 225 (Aug.) 1942.
3. The sesame oil was furnished by Dr. H. L. Daiell of Lakeside Laboratories, Inc.
4. Mufson, I.; Quimby, E. H., and Smith, B.: The Use of Radioactive Sodium As a Guide to the Efficacy of Drugs in the Treatment of Peripheral Vascular Diseases, Am. J. Med. **4**: 1 (Jan.) 1948.

In 9 cases of thromboangiitis obliterans in which the thermometric and oscillometric readings were indicative of moderate circulatory impairment, a comparison was made between the effects of histamine and paravertebral block on the elevation and duration of skin temperatures in the affected limb(s). Figure 1 indicates the results.

TABLE 1.—*Distribution of Cases*

Diagnosis	Number of Patients	Average Age	Weeks of Observation *	Sex
Thromboangiitis obliterans....	13	44	24.0	All males
Arteriosclerosis obliterans.....	30	64	27.5	26 males 4 females
Diabetes and arteriosclerosis obliterans	41	62	32.0	27 females 14 males
Miscellaneous	9	51	3.3	6 males 3 females

* Average of all cases.

Arteriosclerosis Obliterans.—In the group of 30 patients with arteriosclerosis obliterans, 12 were treated for as long as four months. A comparison of the histamine-retarding menstruum with paravertebral blocks showed a result similar to that seen in the thromboangiitis obliterans as far as elevation of skin temperature was concerned. In 5 male and 1 female patient the disease progressed to self amputation of the digits. In all, 8 subjects were observed with varying degrees of moist gangrene. The comparative rapidity with which the digits of 6 of these patients showed a line of demarcation, finally leaving a clean stump, was impressive. Approximately twenty-seven days was the average time for self amputation. In a group of 10 patients treated with tissue extracts and vasodilating drugs exclusive of histamine, the electric cradle and typhoid vaccine, the average time for self amputation was forty-one days. In 2 cases surgical amputation was performed. The degree of pain varied in all 30, but it was the commonest subjective complaint. Fourteen patients claimed relief after six days of therapy, but administration of the histamine in retarding menstruum was continued for nineteen days more. Six patients were completely refractory to the drug. Seven required amputation of the gangrenous organ, 3 died during the course of observation. No improvement was noted by oscillometry in any of the 30 patients during the course of therapy.

TABLE 2.—*Results of Treatment of Thromboangiitis Obliterans with Histamine in Retarding Menstruum*

Case	Duration of Symptoms, Years	Before		After		Conclusion
		Claudication	Ability to Walk 100 Yd.	Claudication	Ability to Walk 100 Yd.	
1	20	Severe	No	Mild	5-fold	Improved
2	4	Mild	Yes	Mild	Yes	No change
3	9	Mild	Yes	None	10-fold	Improved
4	7	Severe	No	Severe	No	No change
5	11	Mild	Yes	None	10-fold	Improved
6	3	Severe	Varied	Severe	Yes	Equivocal
7	5	Moderate	Yes	Mild	7-fold	Improved
8	7	Moderate	No	Moderate	No	No change
9	8	Severe	No	None	10-fold	Improved
10	4	Severe	No	Mild	5-fold	Improved
11	4	Mild	Yes	Mild	5-fold	Improved
12	9	Mild	Yes	Mild	Yes	No change
13	5	Severe	No	None	10-fold	Improved

A comparative study was made of the effect of paravertebral block versus histamine therapy on the temperature of the toes of 13 patients in this group. Figure 2 shows the prolonged and more decided effect of temperature elevation of the toes which resulted from administration of histamine in a retarding menstruum.

Table 4 shows that 14 patients with mild diabetes mellitus and arteriosclerosis obliterans obtained relief from claudication. Eleven were unaffected by the drug, and 4 were too disturbed mentally to give credence to their statements regarding response to therapy. Only transitory improvement by oscillometric determinations was observed in 2 cases, in which the improvement was not considered to be the result of histmaine therapy.

Uncontrolled Diabetes Mellitus and Arteriosclerosis Obliterans.—Twelve of the patients had uncontrolled diabetes mellitus and arteriosclerosis obliterans. Three were admitted to the hospital in diabetic coma. All recovered. Five had been hospitalized for spreading gangrene of the legs. All required amputation. No relief from pain was obtained with histamine therapy in any of the 5 before amputation. Four patients left the hospital before an adequate evaluation of the effects of histamine was obtained. The presence of uncontrolled, and difficult to control, diabetes made it hazardous to interpret the efficacy of histamine therapy in this group.

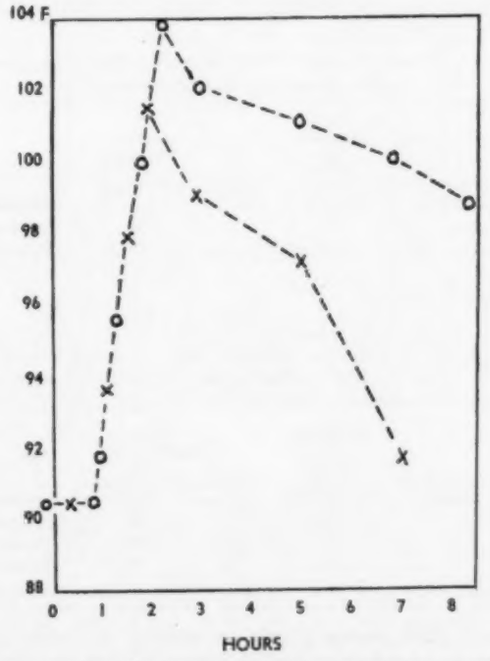


Fig. 1.—Average skin temperatures of toes in 9 patients with thromboangiitis obliterans. Line x. . . . x represents paravertebral block; o . . . . o represents administration of histamine in a retarding menstruum.

Miscellaneous.—1. Three patients with varicose ulcer were treated with histamine for an average of sixteen days. They had been treated for months without any improvement. Powdered blood had been used without any improvement. A combination of 1 cc. histamine in retarding menstruum daily plus powdered blood resulted in clinical improvement in 2 of the 3 cases. One patient was discharged on the eighteenth day after treatment with histamine and powdered blood was started, with a fine epithelized scar. The other was discharged on the thirteenth day after histamine and blood therapy was started. A delicate epithelium covered the lesion.

2. Four patients with arterial embolization, who later had amputations performed, were included in this group. Two died within three weeks after amputation.

Histamine had no effect on decreasing pain or hastening the appearance of the line of demarcation.

3. Two patients with traumatic lacerations and fractures of the legs were treated with histamine in addition to following the usual procedures involved in treatment of such injuries. No rapidity of healing, bony union or relief of pain was obtained that could be attributed to histamine therapy.

COMMENT

Proger [5] has stressed the importance of overcoming tissue anoxia in intermittent claudication. He has used cytochrome C, a naturally occurring enzyme, to overcome anoxia, with a good deal of success. The product is available commercially but is prohibitive in price.

It is our impression that the degree of success one can obtain with histamine depends on the amount of normal collateral vessel supply to the affected limb. If enough collateral circulation can be stimulated, then the role of the drug becomes exceedingly important. Histamine is a vasodilator of capillaries and arterioles

TABLE 3.—*Arteriosclerosis Obliterans Treated with Histamine in Retarding Menstruum*

Number of Patients	Duration of Symptoms,* Years	Claudication	Average Duration of Treatment Days	Conclusions
19	1.5	19	26	Improved
11	1.7	11	33	Unimproved

* Average for group.

TABLE 4.—*Mild Diabetes Mellitus and Arteriosclerosis Obliterans Treated with Histamine in Retarding Menstruum*

Number of Patients	Duration of Symptoms, Years	Claudication	Average Duration of Treatment Days	Conclusions
14	2.0	14	22	Improved
11	2.5	11	27	Unimproved
4	2.5	4	26	Doubtful

in the higher animals and in man. Its side effects (a drop in blood pressure and gastric hyperacidity) are undesirable. However, when histamine is used in a retarding menstruum the characteristic flush and the decreased blood pressure are transitory manifestations.

Some of our patients complained of a "bitter taste" within four to six days after treatment was begun. This was overcome by their drinking about 4 ounces (15 cc.) of milk just before they received an injection of the drug. However, this was necessary in only 9 of the 93 cases studied.

Fourteen of the 19 subjects on whom fractional gastric analysis tests were made showed an absence of free hydrochloric acid when water was used as a stimulant. One cubic centimeter of histamine in retarding menstruum was injected intramuscularly. Gastric analysis on the following day showed the presence of normal amounts of free hydrochloric acid. Eleven patients were followed with repeated fractional gastric analyses, and a tendency was noted for the free hydrochloric acid values to remain around the upper limits of normal (50 to 60 units) as long as the patient continued to receive histamine therapy.

5. Proger, S., and DeKaneas, D. J.: Clinical Use of Cytochrome C in Patients with Intermittent Claudication, Bull. New England M. Center 8: 145 (Aug.) 1946.

Code and Varco [2] produced gastric ulcers in dogs by maintaining a constant absorption of histamine from a yellow wax mixture that was injected into the animals. The doses used were many hundred times that used in this series. In no instance were we able to elicit a history of gastrointestinal disturbance in any of our

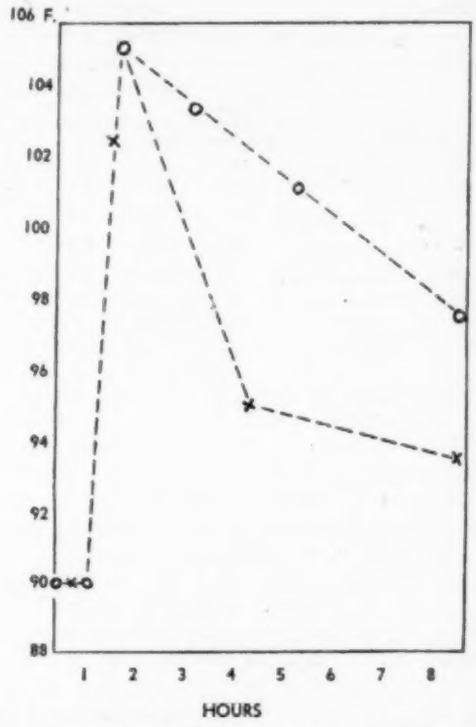


Fig. 2.—Average skin temperature of toes in 13 patients with arteriosclerosis obliterans; lines x....x and o....o as in figure 1.

patients during or after treatment with histamine in the retarding menstruum. Bernstein [6] reported over 30 cases of peptic ulcer in man successfully treated by repeated injections of histamine.

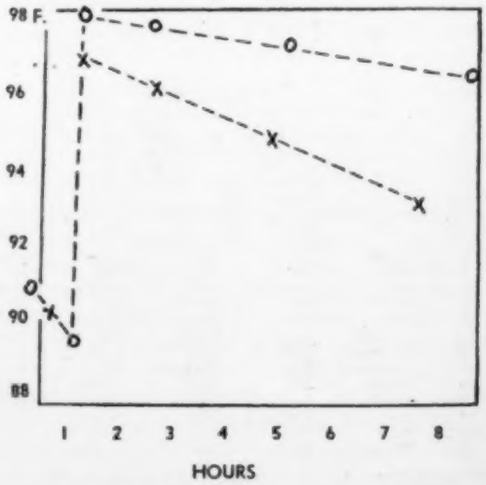


Fig. 3.—Average skin temperature of toes in 10 patients with diabetes mellitus and arteriosclerosis obliterans; lines x....x and o....o as in figure 1.

At the concentrations we used, no contraindications to the drug were encountered, even in coronary disease and hypertension. We have found that 0.5 mg. of the base in 1 cc. of menstruum is the proportion which gives the most consistent results, with a minimum of

6. Bernstein, B. M.: Ann. Int. Med. 26: 852 (June) 1947.

flush and headache. Intramuscular injection of 1 cc. a day is sufficient in most cases to secure a response.

Indeed, we have given 1 mg. of histamine in 1 cc. of retarding menstruum in 22 cases that have not been reported in this series. Untoward effects were not observed. In another group, we gave 2 mg. of histamine base in 1 cc. of retarding menstruum without noting any disagreeable effects. These cases will be reported at a later date.

CONCLUSION

1. Histamine (as the diphosphate) in a retarding menstruum was used parenterally in 93 cases of peripheral vascular disease.

2. Forty-one of 72 patients with intermittent claudication manifested definite improvement. After the patients had received a course of histamine in retarding menstruum complete cessation of pain was observed in 13 instances.

3. A higher and more prolonged skin temperature of the lower extremities was observed in patients when results of treatment with histamine in retarding menstruum was compared with those of paravertebral block.

4. Histamine in a retarding menstruum may decrease the length of time for demarcation and self amputation of mortifying extremities

5. In the period of two years, we saw 32 patients returning periodically for additional therapy. The effect of the course of histamine therapy (about eighteen days) persists about three months.

6. Attention is directed to the necessity of using a dry syringe and needle when injecting the mixture, because the effects of histamine occur too rapidly and are dissipated in a watery medium.

Clinical Notes, Suggestions and New Instruments

PURPURA AND NEUTROPENIA IN TRIMETHADIONE THERAPY

Report of a Case with Recovery

NORMAN VAN WEZEL, M.D.
Foley, Ala.

Spielman, in 1944, was studying numerous chemicals for the purpose of devising a new analgesic. In so doing, he synthesized a drug, 3,5,5-trimethyloxazolidine-2,4-dione, which is now sold under the trade name of tridione.® He found that besides having analgesic power it was also anticonvulsive. It was immediately used by many physicians for the treatment of epilepsy. Clinically, they observed that it was useful primarily for the petit mal type of epilepsy, and not for the grand mal type. Since 1944 there have been many reports about its usefulness in this syndrome.

The purpose of this report is to present a case in which the drug was used, in which a serious complication developed, namely, agranulocytopenia, with exfoliative dermatitis and purpura. To date 3 such cases have been published. All 3 ended fatally, despite prompt and intensive therapy. The patient whose case I report survived.

Mrs. R. K. is a 54 year old white woman, whose chief complaints were pain in her chest, a choking sensation followed by chills, and some peculiar "spells." She described these as follows: A spell occurs each morning. She has a prodromal symptom, namely, a strange sensation in her stomach. She feels slightly nauseated and begins to choke. She feels as if she is unable to get air. Then she begins to shake. The shaking begins in the region of the jaw; then it involves the head, then the upper extremities, and finally the entire body. The spells last from one minute to two hours. The have occurred regularly over a period of two years. The onset of the spells began after she had undergone a rather sudden and severe shock—the home was struck by lightning. She herself sustained no injury. The attacks are much more prevalent during the summer time, and especially when there are storms, and they always occur in the morning. During these spells there is no loss of consciousness.

Her past history reveals nothing of significance except the shock caused by the experience of lightning. She had always been a healthy woman, vigorous, energetic, with no serious illnesses. She has one living child. The menopause was reached at the age of 52, without any adverse symptoms.

A complete physical examination revealed a woman, rather stout, who looked well and was not acutely or chronically ill. The physical findings were well within normal limits except that in the isthmus of the thyroid gland there was a soft cystic mass which measured 3 inches (7.5 cm.) in diameter and which, she said, had been there all her life. It had not changed in size. Her blood pressure was 140 systolic and 60 diastolic. A short diastolic murmur was heard at the mitral area. The only other physical finding of any significance was a retroverted uterus, with a small fibroid, all of which was freely movable. A complete investigation, including laboratory studies,

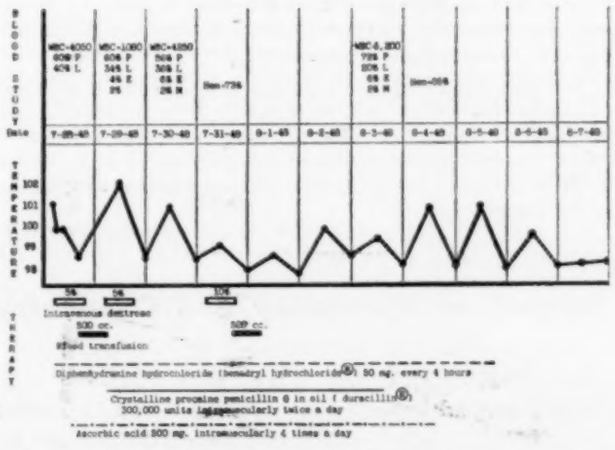


Chart showing the course of the leukocytes, the temperature and the therapy in a case of intoxication due to tridone,® taken by the patient for attacks of the petit mal type of epilepsy. Key to abbreviations: *WBC*, white blood cells; *P*, polymorphonuclears; *L*, lymphocytes; *E*, eosinophilic granulocytes; *M*, monocytes; *Hem.* hemoglobin.

added nothing to this. The blood leukocyte count was 10,000; the hemoglobin was 86 per cent; differential smears were all normal. The urine was free of albumin and sugar. She was first seen April 20, 1948, at which time a tentative diagnosis of petit mal type of epilepsy was made. A factor of conversion hysteria could not be excluded. She was referred to a psychiatrist for an electroencephalogram, and the report was that the findings were consistent with a convulsive disorder, but not typical of epilepsy. On July 12 treatment was started with 5 grains (0.32 Gm.) of trimethadione N.N.R. (tridione®), taken orally, three times a day. On July 19 the patient reported that she was better and that she had had no spells during the week while she was taking the drug. A recheck of her blood cell count and her general condition was done, without any unusual findings. On July 23 she reported that she had to stop taking the drug because it resulted in nausea and vomiting. This was eleven days after the treatment started. On July 26 she presented herself with an extensive outbreak of giant urticaria. On July 27 she had a fine macular eruption, which was generalized but more pronounced on the face and neck. At this time her blood leukocyte count was 4,050; the blood culture was negative; the blood smear showed 60 per cent polymorphonuclear leukocytes and 40 per cent lymphocytes, and a special culture for Meningococcus was negative. The erythrocytes were perfectly normal, as was the number of platelets.

On July 28 she was admitted to the hospital because of numerous purpuric spots appearing over the anterior surface of the chest, both arms and the legs. At this time the rash over the face and neck was beginning to exfoliate. While at the hospital she had blood transfusions, intravenous injections of fluids, penicillin therapy, menadione and ascorbic acid. All of this is shown graphically in the accompanying chart. Her temperature, as seen by the chart, reached rather high peaks. For three days she was critically ill, and her urine output was definitely diminished. Despite her appearance, however, at no time did she lose consciousness, and at no time during her stay at the hospital did she have any spells.

On August 8 she was discharged from the hospital, at which time most of the skin had exfoliated in large patches, with, in some instances, almost a cast formation of the forehead and neck, but her general condition was excellent. On November 17 she reported that she was well, her skin had completely cleared, her blood cell counts were well within normal limits, and she had had no more "spells."

COMMENT

Davis and Lennox reported that 13 per cent of patients who are treated with tridione® have neutropenia, in which there are 2,500 or less cells, but that these patients have no symptoms. Fifteen per cent of patients given this drug have a rash. This patient had both the neutropenia and the rash. There are other toxic symptoms that are due to the drug, which include (1) excessive sensitivity to light (glare phenomenon), (2) nausea, (3) drowsiness and (4) aplastic anemia.

This report is presented to serve as a record in the literature of one of the serious reactions to this drug, tridione.® It is also submitted to show the type of therapy used in order to assist this woman over a serious complication. Lastly, it is to serve as a record of recovery from this most serious complication of the use of tridione.®

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following report.

AUSTIN SMITH, M.D., *Secretary.*

SULFATHIAZOLE AND SULFATHIAZOLE SODIUM OMITTED FROM N. N. R.; COMBINATIONS OF SULFATHIAZOLE OR SULFATHIAZOLE SODIUM WITH OTHER AGENTS UNACCEPTABLE FOR INCLUSION IN N. N. R.

The Council recently considered the present status of sulfathiazole. It considered the fact that approximately 18 per cent of patients who receive sulfathiazole experienced untoward reactions—fever, rash, acute leukemia, leukopenia and other manifestations of toxicity (which compares with about 16 per cent for sulfapyridine, 12 per cent for sulfanilamide, 6 per cent for sulfadiazine and 7 per cent for sulfamerazine). Further question of the need for continuing acceptance of sulfathiazole was raised in view of the fact that less toxic sulfonamide drugs, and penicillin and streptomycin, are now available. In conformance with its policy of withdrawing acceptance of a toxic drug when a less toxic but equally effective agent becomes available, the Council voted to omit sulfathiazole and sulfathiazole sodium from New and Nonofficial Remedies.

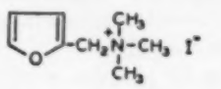
Further consideration of this subject was precipitated by the fact that there are at present marketed a number of sulfonamide mixtures containing sulfathiazole or sulfathiazole sodium. The Council decided that such mixtures involved risk of the danger which led it to omit the drug itself from N. N. R. The Council therefore declared mixtures of sulfathiazole or sulfathiazole sodium with other agents unacceptable for inclusion in N. N. R.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

FURTRETHONIUM IODIDE. — Furmethide Iodide —(SMITH, KLINE & FRENCH.)—Furfuryltrimethylammonium iodide.—$C_9H_{16}INO$.—M.W. 267.12.—The structural formula for furtrethonium iodide may be represented as follows:



Actions and Uses.—Furtrethonium iodide, an isopropylamine analogue of furane, exhibits parasympathomimetic (cholinergic) effects qualitatively similar to those of methacholine (acetyl-beta-methylcholine). It differs from the latter drug chiefly in that furtrethonium iodide is more effective when given orally; and by injection it is quantitatively less active on the cardiovascular, respiratory and gastrointestinal systems than methacholine. Furtrethonium iodide is thus considered to exert a greater and more selective action on the urinary bladder, without the same degree of undesired side effects ordinarily attributed to other cholinergic agents.

Furtrethonium iodide is employed to encourage micturition and eliminate the need for catheterization in urinary retention due to temporary atony of the bladder following trauma such as a surgical operation or parturition, following early after the onset of poliomyelitis or following central or peripheral neural damage. *It should not be used when there is obstruction to the outlet from the urinary bladder.* Its use in patients with accompanying incontinence may cause increased discomfort. It is contraindicated in patients with a history of asthma, and it may produce auricular fibrillation in hyperthyroid conditions.

Dosage.—Furtrethonium iodide is administered orally in the form of tablets, and by subcutaneous injection as a solution. *The drug should never be administered intravenously.* The oral dose should be about five times the effective dose by injection, owing to a certain amount of destruction of the drug by the gastric juice. By subcutaneous injection it should be used cautiously, with small initial doses in aged patients and those with known cardiac disease. For adults, subcutaneous injection of 3 mg. is usually effective within fifteen minutes and should be administered with the patient lying down to avoid possible fainting from a fall in blood pressure when the full effect of the drug becomes manifest. The patient should also be kept covered to avoid possible consequences of such vasomotor effects as flushing and chilling. If this dose does not produce sweating or voiding, a second dose of 5 mg. may be tried after thirty to sixty minutes. Should this prove ineffective, catheterization should be performed and subsequent injections of 4.5 and 7.5 mg., respectively, at eight hour intervals should be tried to avoid recatheterization if possible. If the maximum dose of 7.5 mg. does not cause voiding, the drug may be considered ineffective. An oral maintenance dose of 10 mg. to 30 mg. two or three times daily may be adequate after urination is once started, and may be safer for stimulation of such function in elderly patients.

In children the following schedule of subcutaneous dosage is recommended:

0 to 4 yr.	1.25 to 2.5 mg.
5 to 9 yr.	2.00 to 3.0 mg.
10 to 19 yr.	2.50 to 5.0 mg.

When unwanted side effects occur, such as tachycardia or undue fall in blood pressure, these effects may be abolished by the subcutaneous injection of atropine sulfate, 0.4 mg., plus additional gradually increased doses of 0.6 mg. and 0.8 mg. if necessary.

Tests and Standards.—

Furtrethonium iodide occurs as a white to cream-colored, crystalline powder, with a characteristic odor. It melts between 115 and 119° C. It is very soluble in water and alcohol and practically insoluble in benzene. A 1 per cent solution of furtrethonium iodide is clear and practically colorless, and has a *p*H between 5.3 and 6.0.

Add about 30 mg. of furtrethonium iodide to 2 ml. of sulfuric acid, then add about 5 ml. of chloroform and shake: the chloroform layer is violet in color (*iodide*).

Dissolve about 0.1 Gm. of furtrethonium iodide in 5 ml. of water and acidify with sulfuric acid. Add an excess of a saturated aqueous solution of picric acid containing several drops of sulfuric acid: a yellow, crystalline precipitate is obtained which melts between 167 and 170° C.

Dry about 2 Gm. of furtrethonium iodide, accurately weighed, over phosphorus pentoxide in a vacuum for 4 hours: the loss in weight does not exceed 0.5 per cent.

Char about 1 Gm. of furtrethonium iodide, accurately weighed, over a low flame. Cool, then add 1 ml. of sulfuric acid and continue ignition until no carbon remains: the residue does not exceed 0.1 per cent.

Transfer about 0.25 Gm. of dry furtrethonium iodide, accurately weighed, to a semimicro Kjeldahl flask and digest with 5 ml. of sulfuric acid, 0.1 Gm. of selenium, 0.2 Gm. of mercuric oxide and 2.7 Gm. of potassium sulfate for 1 hour. Dilute the clear solution to 15 ml. with water, make it alkaline with 40 per cent sodium hydroxide and then add 10 ml. of 40 per cent sodium thiosulfate. Distill the ammonia into 20 ml. of 4 per cent boric acid containing 6 drops of a 1:5 mixture of methyl red T. S. and bromcresol green T. S. Titrate the liberated ammonia with 0.05 *N* hydrochloric acid. Each ml. of 0.05 *N* hydrochloric acid is equivalent to 0.0007004 Gm. of nitrogen: the nitrogen content is not less than 5.0 or more than 5.3 per cent.

Transfer 0.2 Gm. of dry furtrethonium iodide, accurately weighed, to a 250 ml. beaker containing about 150 ml. of distilled water. Add 15 ml. of silver nitrate T. S. and 5 ml. of 10 per cent nitric acid. Stir the reactants thoroughly and heat on a steam bath to about 80° C. Allow the precipitate to settle and filter through a tared crucible. Wash the precipitate with hot water which has been made slightly acid with nitric acid. Continue the washing until the wash solution shows only a faint turbidity when treated with a drop of hydrochloric acid. Wash finally with hot water and dry at 105° C. to constant weight (about 4 hours). Each gram of silver iodide is equivalent to 1.138 Gm. of furtrethonium iodide: the amount of furtrethonium iodide is not less than 97 or more than 101 per cent.

FURTRETHONIUM IODIDE TABLETS: Dissolve 20 tablets of furtrethonium iodide in 10 ml. of water, filter the solution and add an excess of a saturated solution of picric acid. Cool in an ice bath and remove the solid by filtration: the melting point of the dry picrate is between 167 and 170° C. The powdered tablets respond to the identification test for iodine described in the monograph on furtrethonium iodide.

Crush sufficient tablets to give the equivalent of about 0.2 Gm. of furtrethonium iodide. Quantitatively transfer the powder to a 150 ml. beaker and add about 50 ml. of water. Heat the solution on a steam bath for about 30 minutes and filter it into a 250 ml. beaker, washing the filter paper thoroughly with several portions of distilled water. To the combined filtrate and washings add 15 ml. of silver nitrate T. S. and 5 ml. of 10 per cent nitric acid. Proceed with the assay, as described in the last paragraph in the monograph on furtrethonium iodide beginning with, "Stir the reactants thoroughly . . . ." The tablets contain not less than 95 or more than 105 per cent of the claimed amount of furtrethonium iodide.

FURTRETHONIUM IODIDE AMPULS: Add an excess of a saturated solution of picric acid to 5 ml. of the ampul solution. Cool the solution in an ice bath and remove the solid by filtration: The melting point of the dry picrate is between 167 and 170° C. The solution responds to the identification test for iodine listed in the monograph on furtrethonium iodide.

Transfer 5 ml. of the solution from the ampuls to a 100 ml. volumetric flask and add 20 ml. of water. To this solution add 1.5 Gm. of potassium carbonate, heat on a steam bath and add about 2.5 ml. of 5 per cent aqueous potassium permanganate in 0.5 ml. portions, rinsing the neck of the flask with water and heating after each addition. Continue the addition of potassium permanganate solution in 0.2 ml. portions until the solution remains pink after heating for 2 minutes. Add a drop of alcohol to remove the pink color, cool the solution to room temperature and dilute to volume with water. Mix thoroughly and filter the solution, discarding the first 20 ml. Transfer exactly 50 ml. of the filtrate to a 250 ml. Erlenmeyer flask; add 0.5 Gm. of potassium iodide, 15 ml. of 10 per cent sulfuric acid and titrate the iodine liberated with 0.01 *N* sodium thiosulfate. Each ml. of 0.01 *N* thiosulfate is equivalent to 0.000445 Gm. of furtrethonium iodide: the amount of furtrethonium iodide is not less than 95 or more than 105 per cent of the claimed amount.

SMITH, KLINE & FRENCH LABORATORIES, PHILADELPHIA

Solution Furmethide Iodide: 5 mg. per cc., 1 cc. ampuls. For subcutaneous injection only.

Tablets Furmethide Iodide: 10 mg.

U. S. patent 2,185,220; U. S. trademark 381,093.

ADRENAL CORTEX EXTRACT (See New and Nonofficial Remedies 1949, p. 360).

The following dosage form has been accepted:

ARMOUR LABORATORIES, CHICAGO 9

Solution Adrenal Cortex Extract: 50 dog units per cc., 10 cc. vials. Each cc. contains not more than 3 mg. of gland extractives having a potency equivalent to 50 dog units when assayed by the Cartland-Kuizenga method, in physiologic solution of sodium chloride. Preserved with alcohol 10 per cent.

U. S. patent 2,096,342 (Oct. 19, 1937; expires 1954).

INFLUENZA VIRUS VACCINE, TYPES A AND B (See New and Nonofficial Remedies 1949, p. 489).

The following dosage form has been accepted:

LEDERLE LABORATORIES, DIVISION AMERICAN CYANAMID COMPANY, PEARL RIVER, N. Y.

Influenza Virus Vaccine, Types A and B: 1 cc. vials (one immunization) and 10 cc. vials (ten immunizations). Preserved with sodium ethylmercurithiosalicylate 1:10,000.

OXIDIZED CELLULOSE (See New and Nonofficial Remedies 1949, p. 436).

The following dosage forms have been accepted:

PARKE, DAVIS & CO., DETROIT 32

Oxycel Cotton Pledgets: 2¼" x 1" x 1" in a glass vial.

Oxycel Gauze Discs (Foley Cones) (4 ply): 5" and 7", each in a glass vial.

Oxycel Gauze Pads (8 ply): 3" x 3" in a glass vial.

Oxycel Gauze Strips (4 ply): 18" x 2" in a glass vial.

U. S. trademark 410,383.

BUTABARBITAL SODIUM (See New and Nonofficial Remedies 1949, p. 456).

The following dosage form has been accepted:

MCNEIL LABORATORIES, PHILADELPHIA 32

Tablets Butisol Sodium: 30 mg. and 100 mg.

U. S. trademark 378,610.

AMINOPHYLLINE-U. S. P. (See New and Nonofficial Remedies 1949, p. 322).

The following dosage form has been accepted:

GOLD LEAF PHARMACAL CO., NEW ROCHELLE, N. Y.

Tablets Aminophylline: 0.1 Gm.

METHADONE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 30).

The following dosage form has been accepted:

THE S. E. MASSENGILL COMPANY, BRISTOL, TENN.

Solution Methadone Hydrochloride: 10 mg. per cc., 10 cc. vials. Preserved with chlorobutanol 0.5 per cent.

METHAMPHETAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 227).

The following dosage form has been accepted:

MCNEIL LABORATORIES, PHILADELPHIA 32

Tablets Syndrox Hydrochloride: 5 mg.

PENICILLIN FOR PARENTERAL USE IN AQUEOUS SOLUTION (See New and Nonofficial Remedies 1949, p. 150).

The following dosage form has been accepted:

MERCK & COMPANY, INC., RAHWAY, N. J.

Crystalline Sodium Penicillin G: 1,000,000 units, 20 cc. vials.

PENICILLIN FOR TOPICAL APPLICATION (See New and Nonofficial Remedies 1949, p. 158).

The following dosage form has been accepted:

SCHENLEY LABORATORIES, INC., NEW YORK 1

Ophthalmic Ointment Crystalline Potassium Penicillin G: 2,000 units per gram, 3.54 Gm. tubes.

PROPYLTHIOURACIL (See New and Nonofficial Remedies 1949, p. 417).

The following dosage forms have been accepted:

EATON LABORATORIES, INC., NEW YORK 18

Tablets Propylthiouracil: 50 mg.

CARROLL DUNHAM SMITH PHARMACAL COMPANY, NEW BRUNSWICK, N. J.

Tablets Propylthiouracil: 50 mg.

TRIPELENNAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 25).

The following dosage forms have been accepted:

CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Cream Pyribenzamine Hydrochloride 2%: 50 Gm. and 459 Gm. jars.

Ointment Pyribenzamine Hydrochloride 2%: 50 Gm. and 459 Gm. jars.

U. S. patent 2,406,594.

ASCORBIC ACID-U. S. P. (See New and Nonofficial Remedies 1949, p. 560).

The following dosage forms have been accepted:

THE STUART COMPANY, PASADENA, CALIF.

Tablets Ascorbic Acid: 100 mg.

TABLEROCK LABORATORIES, GREENVILLE, S. C.

Tablets Ascorbic Acid: 50 mg.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 24, 1949

PATHOGENESIS OF HYPERTENSIVE ARTERIAL NECROSIS

Hypertension in man has for some time been recognized as associated with changes in the arteries and arterioles. In 1919 Fahr described acute arterial lesions which were invariably present in malignant nephrosclerosis. These lesions were most severe and widespread in the kidneys and occurred less constantly in other organs, particularly in the pancreas, adrenals and intestines. Fahr believed that necrotizing arteriolitis is the primary lesion in malignant necrosis and gives rise to hypertension by narrowing the renal vascular bed. Malignant hypertension was believed to be a form of primary nephritis in which the hypertension was a secondary effect. The tendency today is to regard malignant hypertension as a form of primary hypertension leading to but not caused by structural renal damage.

Goldblatt [1] produced experimental hypertension in dogs and in monkeys by constriction of the main renal artery. If the other kidney was removed or its artery clamped, the hypertension would persists for years. Necropsies on these animals revealed arteriolar degeneration and necrosis most frequently in the kidneys but also in the gastrointestinal tract and many other internal organs. These lesions were not distinguishable from those found in malignant hypertension in man. The only difference noted was that the kidney did not show arteriolar necrosis in the dog, whereas it did in man. This discrepancy, according to Goldblatt, affords a clue to the pathogenesis of this lesion. In the experimental animal the intravascular pressure within the kidney is low because the method of inducing hypertension involves the constriction of the main renal artery. In man, the intrarenal vascular tension is high because there is sclerosis and constriction of the preglomerular arterioles. It may be that the only arterioles which become necrotic are those subjected to high bursting tension and to the hypothetical toxic substance in the blood which results from renal insufficiency. Goldblatt points out that in the malignant phase in the experimental animal, even when it terminates fatally in as little as forty-eight to seventy-two hours, the changes which occur in the blood vessels are similar to those of the terminal phase of human malignant hypertension.

In the malignant phase in the experimental animal, the changes do not occur in the vessels of the kidney beyond the site of the clamp, where there is no hypertension. The vascular changes in the malignant phase do not occur without elevation of blood pressure in animals with bilateral nephrectomy in which profound azotemia develops, or without renal excretory functional disturbances in animals with great degree of hypertension of long standing. It appears, therefore, that impairment of renal function together with increased bursting tension of the vascular wall are necessary conditions for the production of the pathologic changes in the vessels and that even in human beings these changes usually occur only terminally. Interference with the blood supply of any organ other than the kidney does not result in either temporary or permanent elevation of blood pressure. Renal excretory insufficiency by itself is not sufficient, according to Goldblatt, for the development of hypertension.

Wilson and Pickering [2] found acute arterial lesions, structurally identical with those of malignant hypertension in man, in rabbits with arterial hypertension produced by renal artery constriction according to the technic of Goldblatt. These lesions were most frequent and severe in the intestine, but were also present in the stomach, liver, adrenal gland, heart and eye. They were absent from the kidney, to which the renal artery had been constricted. It appeared, therefore, that a greatly raised intra-arterial pressure is a chief factor in determining these lesions in human and experimental hypertension.

Byrom and Dodson [3] confirmed the observations of Wilson and Pickering and of Goldblatt by demonstrating that constriction of the renal artery in a rat protects the kidney from vascular damage. This fact suggests that increased intravascular tension plays a direct part in causing vascular lesions. It is assumed that an intravascular tension leads directly to sudden overstretching of the vascular wall, the overstretched muscle undergoing necrosis and lysis. Byrom and Dodson demonstrated in young adult rats that brief artificial distention of the arterial tree causes typical focal arterial necrosis, the smaller arteries of the kidney being selectively vulnerable. They believe that neither uremia nor toxic absorption from injured renal tissue is a constant or necessary factor in the process and that arterial necrosis represents an attempt to repair

1. Goldblatt, H.: The Renal Origin of Hypertension, Physiol. Rev. **27**: 120-165 (Jan.) 1947.

2. Wilson, C., and Pickering, G. W.: Acute Arterial Lesions in Rabbits with Experimental Renal Hypertension, Clin. Sc. **3**: 343-355 (Aug. 15) 1938.

3. Byrom, F. B., and Dodson, L. F.: The Causation of Acute Arterial Necrosis in Hypertensive Disease, J. Path. & Bact. **60**: 357-368 (July) 1948.

a threatened breach due to local death and lysis of overstretched medial muscle fibers in the terminal arteries and arterioles.

Early cases of essential hypertension in man frequently fail to show renal insufficiency. However, it is possible that the development of more sensitive tests may yet demonstrate its presence and its role in the causation of hypertension.

RUSSIAN SCIENTISTS AND PRIORITIES FOR MEDICAL DISCOVERIES

American newspapers and magazines have been chuckling over claims by the Russian press that Russians invented airplanes, radios and innumerable other mechanical devices. In the official publication, *VOKS,* circulated by the U. S. S. R. Society for Cultural Relations with Foreign Countries, one Alexander Popovsky [1] says that Russian technical thought has often been consulted abroad and insists that the law of conservation of energy, the Voltaic arc, the incandescent lamp, galvanoplastics, Golubitzky's telephone, the radiotelephone, the telegraph and many other Russian discoveries and inventions are all wrongfully ascribed to Germans, Englishmen, Americans and Italians. He asserts that the Giemsa stain was really discovered by the Russian Romanovsky instead of the German Giemsa. He says that the parasite that bears the name of Colonel Leishman was described by a Russian named Borovsky five years earlier than the description by Wright, who gave it the name of Leishmania in honor of Leishman, who was his superior officer. Then he says that Sobolev really discovered the cause of diabetes and the treatment for it, and he accuses Sherrington and Görning of taking work on the cortex of the brain from a Russian named Vvedensky. Much of his discussion concerns some discoveries alleged to have been made by one Gurvich who recognized mitogenetic radiation, which Popovsky says may yet be recognized as a great advance in the study of cancer. Apparently Audubert, a Frenchman, claimed credit for this discovery in 1938 at an international conference of the Faraday Society, held in Oxford, and at that time a Professor Prinsheim of Belgium informed the audience that Gurvich had made the discoveries previously. Another instance cited is that of the Austrian surgeon Starlinger, who claimed priority for the development claimed by the Russian Vyshnevsky. According to Popovsky, Leriche endeavored to take over this discovery as did also a Portuguese scientist named Pereia. However, Finsterer informed a surgical society in a meeting in Vienna in 1946 that Starlinger's discovery had actually been made previously by Vyshnevsky.

In the not so distant past, Russia's most ambitious and talented students traveled abroad to acquire knowledge of scientific methods. These men returned to Europe imbued with admiration for the scientific and cultural accomplishments of their neighbors. In the "Autobiographical Notes of Sechenov" appear expressions of admiration and gratitude by Sechenov, who is known as the "father of Russia's physiology," toward the great leaders of medicine in other countries under whom he had studied. Almost with reverence Sechenov speaks of Carl Ludwig, Bunsen, Johannes Mueller, Helmholtz and Claude Bernard. The biographies of Mechnikov, Kovalevskiy, Pavlov, Botkin and Pirogov present similar attitudes. Now comes the recent upsurge in nationalist feeling which is hardly in accord with Marxist tenets and which sounds a call "to break the bonds of servility to the foreign authorities."

In times such as these, when nationalist feeling flames high, the essay of William Osler on "Chauvinism in Medicine" merits rereading. The following paragraph is particularly noteworthy:

> With our History, Traditions, Achievements, and Hopes, there is little room for Chauvinism in medicine. The open mind, the free spirit of science, the ready acceptance of the best from any and every source, the attitude of rational receptiveness rather than of antagonism to new ideas, the liberal and friendly relationship between different nations and different sections of the same nation, the brotherly feeling which should characterize members of the oldest, most beneficient and universal guild that the race has evolved in its upward progress—these should neutralize the tendencies upon which I have so lightly touched.

And one might well read also at such times the definition of the "profession of medicine" by Sir Thomas Watson, who wrote in his "Practice of Physic":

> The profession of medicine, having for its end the common good of mankind, knows nothing of national enmities, of political strife, of sectarian dissensions. Disease and pain the sole conditions of its ministry, it is disquieted by no misgivings concerning the justice and honesty of its client's cause; but dispenses its peculiar benefits, without stint or scruple, to men of every country, and party, and rank, and religion, and to men of no religion at all.

CHLORAMPHENICOL (CHLOROMYCETIN®) AND AUREOMYCIN

The earliest specific remedies, quinine, mercury, antimony and arsphenamine, Woodward [1] points out, were effective chiefly against the larger infectious agents, the protozoa and the spirochetes. The introduction of the sulfonamide drugs extended the field of specific medication to include infections caused by bacteria of the gram-positive type and some of the antibiotics, proved effective against the gram-negative group of bacilli as well. Streptomycin is effective against a number of the gram-negative organisms and against certain clinical types of tuberculosis. Chloramphenicol and aureomycin, two antibiotics introduced most recently, appear to be highly specific against many members of the rickettsial group and against some of the viral-like agents of disease.

1. Popovsky, A.: A Few Words About Priority in Science, VOKS Bull. **57**: 36, 1949. (U. S. S. R. Society for Cultural Relations with Foreign Countries.)

1. Woodward, T. E.: Chloromycetin and Aureomycin: Therapeutic Results, Ann. Int. Med. **31**: 53-82 (July) 1949.

The effectiveness of chloramphenicol, isolated by Burkholder from an actinomycete, Streptomyces venezuelae, and prepared as a crystalline compound by Ehrlich and his co-workers,[2] was demonstrated in rickettsial and psittacosis infection of chick embryos and mice. The brucellae, the salmonellae and the coliform bacteria showed considerable degree of sensitivity to this new antibiotic.

Aureomycin, first isolated by Duggar [3] from an actinomycete, Streptomyces aureofaciens, seems to extend its activity over a wider range of infectious agents than that of any of its predecessors. The product is moreover effective when given by mouth, and its use has not thus far been accompanied with serious untoward effects. The most striking effect of aureomycin is its therapeutic activity in all of the known rickettsias and the viruses of psittacosis-lymphogranuloma venereum group in embryonated hen's eggs, mice and guinea pigs. The antibiotic has been found to be totally ineffective against all other viruses that have been tested thus far (Wong and Cox in Woodward [1]). Aureomycin is the first agent to exert regular and definite beneficial effect in cases of primary atypical pneumonia. The results of oral therapy with aureomycin in pneumonias due to various types of pneumococci have been comparable with those obtained with penicillin.

Both chloramphenicol and aureomycin have been found effective in the treatment of Rocky Mountain spotted fever, scrub typhus and murine typhus. Chloramphenicol appeared to be the drug of choice in epidemic typhus, while aureomycin has proved beneficial to patients with Q fever. Aureomycin acted as a specific in the psittacosis-lymphogranuloma venereum group of diseases. Chloramphenicol is the drug of choice in typhoid. Both chloramphenicol and aureomycin appear to be equally effective in brucellosis and in tularemia.

2. Ehrlich, J.; Bartz, Q. R.; Smith, R. M.; Joslyn, D. A., and Burkholder, P. R.: Chloromycetin, a New Antibiotic From a Soil Actinomycete, Science **106**: 417, (Oct. 31) 1947.

3. Duggar, B. M.: Aureomycin: A Product of the Continuing Search for New Antibiotics, Ann. New York Acad. Sc. **51**: 177-181 (Nov. 30) 1948.

Current Comment

SELF-EMPLOYED PHYSICIANS AND THE SOCIAL SECURITY ACT

Under H. R. 2893, physicians, lawyers and others who are self employed and carry on a "trade or business" would come within the provisions of the Social Security Act. As a result of action taken by the Ways and Means Committee of the House of Representatives a new bill (H. R. 6000) has been introduced in the House. The new bill specifically exempts physicians and certain other groups from the proposed broadened coverage of the Social Security Act. This bill has been approved by the Committee by a vote of 22 to 3. H. R. 6000 would not include in a "trade or business" the performance of service "by an individual in the exercise of his profession as a physician, lawyer, dentist, osteopath, veterinarian, chiropracter, or optometrist, or as a Christian Science practitioner, or as an aeronautical, chemical, civil, electrical, mechanical, metallurgical, or mining engineer; or the performance of such service by a partnership." Physicians, who, of course, "exercise" a profession, will seriously oppose any attempt to include them in Social Security coverage.

ROENTGEN EXAMINATION OF THE CHEST

Recent years have seen the development of a widespread recognition of the limitations of single posteroanterior roentgenograms or photofluorograms of the chest, especially as far as the detection of small pulmonary lesions is concerned.[1] This limitation is understandable in view of the size, location and relative density of some of the early or minimal lesions in question, plus the factor of personal equation in interpretation of the roentgenogram. Unfortunately, this diagnostic survey or screening type of examination is often called a "roentgen examination." Actually the difference between a survey and a roentgen examination is significant. Taking a single miniature or a large roentgenogram of the chest does not constitute a roentgen examination in the fullest meaning of the latter term. One is a brief medical diagnostic procedure and the other a careful medical study. A roentgen examination of the gastrointestinal tract would usually include adequate fluoroscopic examination followed by multiple views, with the patient in different positions. Similarly, roentgen examination of the urinary tract would include a preliminary single (or stereoscopic) roentgen examination of the abdomen, followed by roentgenograms made after injection of a contrast medium; these roentgenograms may be plain or stereoscopic, with the patient horizontal or erect and the approach anteroposterior, posteroanterior, oblique or otherwise. Similarly, roentgen examination of the respiratory tract should mean preliminary fluoroscopy followed by such roentgenographic studies as are indicated. In one case posteroanterior and lateral roentgenograms may be adequate; in another stereoscopic posteroanterior and oblique views, and in a third posteroanterior, anteroposterior and posterior lordotic projections. In still other cases heavy density, Bucky diaphragm roentgenograms or roentgenograms made in different phases of respiration may be essential. Proper or complete roentgen examination of the chest may be just as material and time consuming as proper roentgen examination of the gastrointestinal or genitourinary tracts. However, the early diagnosis of pulmonary tuberculosis, bronchogenic cancer and other curable conditions of the respiratory tract renders such complete examination more than justifiable. The reliability of such roentgen examination of the lungs, when made by trained and experienced physicians, is believed to be of the same high degree as that of comparable roentgen examination of other organs or systems.

1. Birkelo, C. C., and others: J. A. M. A. **133**: 359-366 (Feb. 8) 1947. Garland, L. H., Radiology **52**: 309-328, 1949.

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ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Sept. 19, 1949.

Sixteen House Members Study Health Plans Abroad

Nine Democratic and seven Republican members of the House Committee on Interstate and Foreign Commerce are members of the Congressional party which on September 12 began a two week tour to study government medical care systems in Europe. In the group are Representatives Crosser (Ohio), Beckworth (Texas), Klein (New York), Sullivan (Missouri), McGuire (Connecticut), Underwood (Kentucky), Biemiller (Wisconsin), Linehan (Illinois) and Wilson (Oklahoma), all Democrats, and the following Republicans: Hall (New York), Dolliver (Iowa), Scott and Gillette (Pennsylvania), Bennett (Michigan), O'Hara (Minnesota) and Ellsworth (Oregon). Their first engagement in London was a conference with Health Minister Aneurin Bevan. Six of the sixteen members are on the subcommittee which handles health legislation: O'Hara, Gillette, Bennett, Scott, Biemiller and Wilson.

Sickness Survey Bill Modified

The health legislation subcommittee of Senate Labor and Public Welfare Committee has approved a bill authorizing the Public Health Service to conduct a study of methods for a proposed national survey of incidence of chronic and degenerative diseases. As originally introduced, the bill (S. 2211) provided for the survey itself. Intercession by Senator Taft, a member of the subcommittee, resulted in the plan's being modified, so that it now calls merely for a preparatory study of methods. Eighteen months would be allowed for the preliminary investigation, and an expense ceiling of $200,000 is fixed.

The health subcommittee also has approved a prospective amendment of the Public Health Service Act which would make all advisory councils to the National Institute of Health uniform as to the number of members and mode of selection.

United Mine Workers Announces Medical Care Eligibility Rules

The Welfare and Retirement Fund, United Mine Workers of America, has promulgated a set of conditions governing eligibility for participation in the medical and hospital care program, effective Sept. 1, 1949. Maximum benefits—hospitalization, medical care while hospitalized, home and office care by a physician and drugs as prescribed by a physician—are available to: disabled union members receiving cash disability grants, widows receiving widows assistance cash grants, dependents of such members and widows and children of deceased members.

The same comprehensive privileges also are extended to the same groups even if such persons are not receiving cash grants because of outside sources of income, provided this income does not exceed 150 per cent of the maximum they would receive from the fund if there were no supplemental assistance. If it is in excess, benefits are limited to hospitalization and medical care during hospitalization. Members receiving pensions, along with wives and minor children, are eligible for the full range. Working or idle members of the union, and their families, may receive only hospitalization and inpatient medical care.

Veterans Administration Radioisotope Advisors Hold Annual Meeting

The third annual meeting of the Central Advisory Committee on Radioisotopes to the Department of Medicine and Surgery, Veterans Administration, was held in Washington September 15, with the following members present: Drs. Shields Warren, Atomic Energy Commission; Stafford Warren, University of California at Los Angeles; Hymer Friedell, Western Reserve University School of Medicine; Hugh Morgan, Vanderbilt University School of Medicine, and Perrin H. Long, Johns Hopkins University School of Medicine.

Dr. George Lyon, chief of VA's radioisotope section, reported that units are now active in twelve veterans hospitals and $1,000,000 has been spent to date in development of the atomic medicine program. Four additional units are scheduled to be activated within a year, he stated.

Coming Medical Meetings

Annual Conference of State Secretaries and Editors, Chicago, A. M. A. Building, Nov. 3-4. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Ambulatory Fracture Association, Toronto, Canada, Royal York Hotel, Oct. 24-27. Dr. H. W. Wellmerling, 120 S. LaSalle St., Chicago 3, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 9-14. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Secretary.

American Academy of Pediatrics, San Francisco, Nov. 14-17. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Clinical and Climatological Association, White Sulphur Springs, W. Va., The Greenbrier, Oct. 27-29. Dr. James Bordley III, Bassett Hospital, Cooperstown, N. Y., Secretary.

American College of Surgeons, Chicago, Stevens Hotel, Oct. 17-21. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Hospital Association, Cleveland, Sept. 26-29. Mr. George P. Bugbee, 18 East Division St., Chicago, Executive Secretary.

American Public Health Association, New York, Oct. 24-28. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Roentgen Ray Society, Cincinnati, Oct. 4-7. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Iowa, Secretary.

American Society for the Study of Arteriosclerosis, Chicago, Hotel Knickerbocker, Nov. 5-7. Dr. O. J. Pollak, Quincy City Hospital, Quincy 69, Mass., Secretary.

American Society of Clinical Pathologists, Chicago, Drake Hotel, Oct. 11-15. Dr. C. G. Culbertson, 740 S. Alabama St., Indianapolis, Secretary.

American Society of Tropical Medicine, Memphis, Tenn., Nov. 6-9. Dr. Frederick J. Brady, National Institute of Health, Bethesda 14, Md., Secretary.

Association of Military Surgeons of the United States, Washington, D. C., Nov. 10-12. Col. James M. Phalen, Army Institute of Pathology, Washington 25, D. C., Secretary.

Central Society for Clinical Research, Chicago, Drake Hotel, Nov. 4-5. Dr. Kenneth G. Kohlstaedt, 960 Locke St., Indianapolis 7, Secretary.

Conference of State and Provincial Health Authorities of North America, New York, Oct. 28. Dr. Russell O. Saxvik, State Health Officer, Bismarck, N. D., Secretary.

Delaware, Medical Society of, Wilmington, Oct. 10-12. Dr. W. Edwin Bird, 822 North American Bldg., Wilmington, Executive Secretary.

District of Columbia, Medical Society of the, Washington, Hotel Statler, Oct. 17-19. Mr. Theodore Wiprud, 1718 M St. N.W., Washington 6, Secretary.

Gulf Coast Clinical Society, Pensacola, Fla., Oct. 6-7. Dr. Arthur J. Butt Jr., 1101 N. Palafox St., Pensacola, Fla., Secretary.

Indiana State Medical Association, Indianapolis, Sept. 26-29. Mr. Ray E. Smith, 1021 Hume-Mansur Bldg., Indianapolis 4, Executive Secretary.

Inter-American Congress of Surgery, Chicago, John B. Murphy Memorial Auditorium, Oct. 21-23. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Chairman Program Committee.

International College of Surgeons, United States Chapter, Atlantic City, Haddon Hall, Nov. 7-12. Dr. Arnold S. Jackson, 1516 Lake Shore Drive, Chicago 10, Secretary.

Inter-State Post Graduate Medical Association of North America (International Medical Assembly), Philadelphia, Oct. 31-Nov. 3. Dr. Tom B. Throckmorton, Equitable Bldg., Des Moines, Iowa, Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Municipal Auditorium, Oct. 3-6. Dr. W. Merritt Ketchum, 630 Shukert Bldg., Kansas City, Mo., Secretary.

Kentucky State Medical Association, Owensboro, Oct. 6-9. Dr. Bruce Underwood, 620 S. Third St., Louisville 2, Secretary.

Mississippi Valley Medical Society, St. Louis, Jefferson Hotel, Sept. 28-30. Dr. Harold Swanberg, 209-224 W. C. U. Bldg., Quincy, Ill., Secretary.

Neurosurgical Society of America, Quebec, Canada, Chateau Frontenac, Oct. 30-Nov. 1. Dr. Edward Schlesinger, 710 W. 168th St., New York, Secretary.

Nevada State Medical Association, Elko, Sept. 29-Oct. 1. Dr. Roland W. Stahr, 118 California Ave., Reno, Secretary.

Oklahoma City Clinical Society, Oklahoma City, Biltmore Hotel, Oct. 24-27. Dr. F. Maxey Cooper, 512 Medical Arts Bldg., Oklahoma City, Director of Clinics.

Oregon State Medical Society, Eugene, Oct. 12-15. Dr. Werner E. Zeller, Medical-Dental Bldg., Portland 5, Secretary.

Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 26-29. Dr. W. F. Donaldson, 8104 Jenkins Arcade, Pittsburgh 22, Secretary.

Southern Medical Association, Cincinnati, Nov. 14-17. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southwestern Medical Association, Albuquerque, New Mexico, Nov. 9-12. Dr. Wickliffe R. Curtis, First National Bank Bldg., El Paso, Texas, Secretary.

Southwestern Surgical Congress, Houston, Tex., Shamrock Hotel, Sept. 26-28. Dr. C. R. Rountree, 1200 N. Walker St., Oklahoma City, Secretary.

Virginia, Medical Society of, Fort Monroe, Old Point Comfort, Oct. 9-12. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond, Secretary.

Western Orthopedic Association, Santa Barbara, Calif., Biltmore Hotel, Oct. 19-21. Dr. Charles W. Gilfillan, 1680 N. Vine St., Hollywood, Calif., Secretary.

Wisconsin, State Medical Society of, Milwaukee, Hotel Schroeder and Milwaukee Auditorium, Oct. 3-5. Mr. Charles H. Crownhart, 704 E. Gorham St., Madison, Secretary.

World Medical Association, General Assembly, London, Eng., Oct. 10-15. Dr. Louis H. Bauer, 2 E. 103d St., New York City, Secretary General.

GOVERNMENT SERVICES

ARMY

SYMPOSIUM FOR RESERVE MEDICAL OFFICERS

The second medico-military symposium for Medical Department Reserve officers of the Third Army Area will be held at Fort McPherson, Ga., October 19-21. The first symposium was held last April at Oliver General Hospital. The second symposium will be attended also by reserve officers of the various components of the Medical Department. The purpose of these meetings is to interest Reserve officers in subjects which have a medicomilitary significance. Among the numerous subjects to be discussed are:

A Reserve Officer's Evaluation of the ORC Training Program, by Col. James B. McLester, associate professor of medicine, Medical College of Alabama, Birmingham.

Policies Governing the Organized Reserve Corps, by Lieut. Col. J. J. Hamlin, Adjutant General's Section, Third Army.

Current International Situation, by Lieut. Col. Stephen M. Mellnik of the Third Army.

Insect and Rodent Control, by Major Samuel O. Hill (MSC), chief, Tropical Medicine and Parasitology Division, Third Army Medical Laboratory.

Military Medical Aspects of Rheumatic Fever, by Col. Charles L. Leedham, chief, Medical Service, Oliver General Hospital.

Medical Department Reserve Training Program, by Col. Floyd L. Wergeland, of the Surgeon General's Office.

Role of the Professional Consultant in Peace and War, by Brig. Gen. Frank B. Berry (R), New York.

Three films, "Soviet Medicine at the Front," "Assignment Medicine" and "They Also Serve," produced by the American Medical Association, will be presented at the Post Theater on the second day of the symposium, on which day there will be a meeting also in nearby Atlanta with the Fulton County Medical Society addressed by Col. William L. Wilson (MC) of the Surgeon General's Office on Medical Plans for Civil Defense and Disaster. The buffet supper on the third day will be addressed by Lieut. General Alvan C. Gillem Jr., commander of the Third Army, Major General George E. Armstrong, deputy surgeon general, Department of the Army, and Major General Joseph I. Martin, commandant, Medical Field Service School.

FOUNDERS OF NEUROLOGY

The Armed Forces Institute of Pathology and the Army Medical Library prepared an exhibit entitled "Founders of Neurology of the Past Century," which was displayed at the Fourth International Congress of Neurology, Paris, France, September 5-10. The exhibit featured the photographs of the world's greatest neurologists, representing sixteen countries, and copies of their most outstanding work. The selection was made by a committee of twenty-five neurologists, with the cooperation of eighty-two contributors among the foremost of neurologists in the United States and was prepared under the direction of Dr. Webb Haymaker of the Armed Forces Institute of Pathology, who accompanied the exhibit to Paris. Others who went to Paris were Lieut. Col. Stephen W. Ranson, U. S. Army (MC); Lieut. Col. Edward H. McCue, U. S. Air Force (DC), and Comdr. Hannibal Hamlin, U. S. Navy (MC). Among those whose memories were thus honored were Claude Bernard, Cajal, Charcot, Helmholtz, Hughlings Jackson and Pavlov.

NURSE ASSIGNED TO RESEARCH ON ISOTOPES

The Surgeon General's office announces that Army nurse Lieut. Margaret E. Peters has been assigned to the team of specialists at the Army Medical Center, Washington, D. C., who are studying possibilities in the use of radioactive substances in the diagnosis and treatment of disease. The other members of the team are Capt. Robert J. Soberman and Capt. Richard P. Keating, both doctors, and Lieut. Col. Roy E. Maxwell, chemist. Lieutenant Peters is the first army nurse to be assigned to research on isotopes. The purpose of her assignment is to develop technics and procedures in the handling of radioactive substances which may be used by nurses in the future. Lieutenant Peters served overseas during World War II, landing with the Normandy force on the Utah beachhead. Following the war she was assistant director of nurses in the New Rochelle Hospital in Westchester County, N. Y.

NAVY

NEW COURSE IN AVIATION MEDICINE

Medical officers of the Regular Navy and the Naval Reserve may apply for a course in aviation medicine which will begin November 15 at the School of Aviation Medicine and Research, Pensacola, Fla. An agreement to remain on active duty for one year after completion of the course must be included in each application. The course will consist of an academic period of six months' duration and a flight training and flight indoctrination period of three months. Special training is offered in the medical aspects of atomic warfare, in problems of high acceleration and in the effects of high altitude flight.

Graduates of the complete course will be designated as flight surgeons and will be eligible for the extra compensation for duty involving flying with active aviation units.

Medical officers on active duty who desire to apply should do so by letter or dispatch to the Chief of the Bureau of Medicine and Surgery; inactive Reserve officers should apply to the Chief of the Bureau of Medicine and Surgery via the commandant of their Naval District.

CERTIFIED BY SPECIALTY BOARDS

The following additional medical officers have been certified by specialty boards:

Capt. James J. Sapero, M.C., American Board of Preventive Medicine and Public Health, and Comdr. Lester J. Pope, M.C., American Board of Internal Medicine; Lieut. Col. Warren H. Diessner, M.C., and Lieut. Col. Weldon J. Walker, M.C., both by the American Board of Internal Medicine.

GRADUATE INSTRUCTION

The following officers of the Regular Navy have been nominated for assignment to duty under instruction in the Navy's Graduate Medical Program:

Comdr. Marshall Cohen, Chicago, to instruction in the medical aspects of radiologic defense, Duke University, Durham, N. C.

Comdr. James R. Kingston, Coleraine, Minn., to instruction in virology and public health, Johns Hopkins University School of Hygiene and Public Health, Baltimore.

Comdr. James B. Shuler, Shenandoah, Va., to instruction in internal medicine, University of Pennsylvania Graduate School of Medicine, Philadelphia.

Lieut. Comdr. William C. Livingood, Hagerstown, Md., to instruction in otolaryngology, University of Pennsylvania Graduate School of Medicine, Philadelphia.

Lieut. Comdr. Louis M. Tebow, Tamoroa, Ill., to instruction in surgery, University of Pennsylvania Graduate School of Medicine, Philadelphia.

Lieut. (jg) Ernest G. McKay, Tampa, Fla., to a residency in radiology, Naval Hospital, Philadelphia.

PERSONAL

Capt. Louis M. Harris (MC), now at the Naval Hospital, Great Lakes, Ill., received the degree Doctor of Medical Science on August 24 at the University of Pennsylvania Graduate School of Medicine.

Under sponsorship of the Navy, Dr. William C. Boyd, professor of immunochemistry, Boston University School of Medicine, went to Africa in August to visit research units, medical schools and native tribes. It is expected that his studies there will be of value to anthropologists and contribute also to the understanding of certain public health problems. Dr. Boyd is the author of books on anthropology and blood types.

AIR FORCE

AIR FORCE MEDICAL SERVICE

Reorganization of the Office of the Surgeon General, U. S. Air Force, has been completed. The medical service formerly had been under Army control.

Major General Malcolm C. Grow, the USAF Surgeon General, announces that the Office of the Surgeon General is divided into three directorates: (1) Directorate of Professional Services, (2) Directorate of Staffing and Education and (3) Directorate of Plans and Hospitalization.

The Office of the Surgeon General will supervise all medical activities of the Air Force, including operation of hospitals at Air Force bases in the Continental United States and in overseas areas. It will also render technical supervision over the School of Aviation Medicine, Randolph Air Force Base, Randolph Field, Texas; the Aero-Medical Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio, and the Arctic Aero-Medical Laboratory, Ladd Air Force Base, Alaska.

The Air Force Medical Service is participating in joint staffing of Army general hospitals and other joint Army medical activities, including recruiting stations, the Armed Forces Institute of Pathology, the Army Medical Center, Central Dental Laboratories, Medical General Dispensaries, the Medical Nutrition Laboratory and the Armed Forces Medical Procurement Office. The personnel named to key positions in the Office of the Surgeon General are men of proved professional and administrative ability.

CIVILIAN INTERN PROGRAM

The U. S. Air Force Medical Service will commission 300 civilian physicians, now serving as interns, as first lieutenants on active duty with the Air Force Medical Reserve Corps, Major General Malcolm C. Grow, Surgeon General of the Air Force, has announced. Eligible to receive commissions are medical school graduates now serving internships at approved hospitals, who have at least six months of internship remaining. Physicians who are so commissioned will serve two months of active duty for each month of internship as commissioned members of the Medical Reserve Corps.

On completion of active duty tours, officers who apply and are selected as members of the regular Air Force Medical Corps will be eligible for participation in the Air Force residency program to be conducted at civilian and military hospitals. Officers who do not apply for commissions in the regular Air Force and who do not participate in the residency program may continue to serve on active duty as Reserve officers for specific periods of time. Information concerning the intern program may be obtained from the Officer's Procurement Branch, Office of the Surgeon General, Headquarters, U. S. Air Force, Washington 25, D. C.

AIR FORCE RECEIVES 3,706 MEDICAL OFFICERS FROM THE ARMY

As of July 29, 3,706 medical officers had been transferred from the Department of the Army to the recently established Air Force Medical Department, according to a joint Army-Air Force agreement in a proportional division of available medical officers, to meet the needs of the two services. The transfers were made after voluntary applications made by interested medical officers had been screened. Of this number, 407 were doctors of medicine, the remainder being officers of the Dental Corps, Veterinary Corps, Medical Service Corps, Army Nurse Corps, Dietitians, Physical Therapists and Occupational Therapists.

PUBLIC HEALTH SERVICE

FORTY MILLION DOLLAR CLINICAL CENTER

The substructure of the $40 million, fourteen story clinical center being built by the government for the National Institutes of Health at Bethesda, Md., is nearly completed, and the air-conditioned building is scheduled for completion by July 1952. In a press release, Oscar R. Ewing, Federal Security Administrator, said that the clinical center will play a leading part in the battle against chronic diseases and that it will house one of the best equipped medical and basic science laboratories ever built, together with hospital facilities for 500 patients. Dr. Leonard A. Scheele, Surgeon General of the Public Health Service, has said that the object of the planning committee was to design a center in which patients will be given medical care of the highest standards. Because of the meticulous care that must be taken before a new treatment is given to patients and the need for elaborate studies during treatment, laboratory space in the new clinical center will be twice that assigned to patients. Dr. Scheele stressed that the clinical center will provide not only the best medical care but such facilities for the patients' comfort as a barber shop, a beauty parlor, a circulating library and a chapel suitable for worship by all faiths. Patients will be selected from all parts of the country according to the nature of their illness. Diagnosis will be the sole ticket of admission, and only patients with the particular type of disease under study at the center will be accepted. Patients will be accepted on referral by their physician, hospital or other medical institution and will be referred back to their physician or institution when treatment is completed. The concentrated power of scientific men and machines, the announcement said, will be aimed at such long term diseases as mental illness, cancer, heart and circulatory ailments, diseases of metabolism and some types of infectious and tropical sickness.

The center will use the team technic, bringing together the skills of physicians and laboratory researchers and the discoveries of so-called pure science. The main building will enclose 17 million cubic feet (gross). The structure will be finished in red brick with limestone facing and aluminum window frames. There will be a bath, toilet and overhead shower in every room. Oxygen and suction will be supplied from central sources. Rooms will be painted in quiet pastel colors. Two patients usually will be assigned to each room.

The equipment for nuclear energy research will include a 12 million volt electrostatic generator, a synchrotron and a 2 million volt radiotherapy machine. The surgical suite will comprise eight rooms and a television control room. All anesthesia will be done by physicians. The emergency suite for treatment of accidents will be located in a sub-basement. The department for rehabilitation will administer occupational, physical and recreational therapy. Spiritual ministration will also operate within this area of patient care.

EXAMINATION FOR SANITARIANS (NUTRITIONIST)

A competitive examination for appointment of sanitarians (nutritionist) in the Regular Corps of the United States Public Health Service will be held November 14-16. Applications must be received no later than October 17. Appointments will be made in the grade of senior assistant sanitarian (equivalent to Army rank of captain). Appointments are permanent in nature and provide opportunities to qualified nutritionists for a life time career in hospital nutrition and public health.

Applicants who complete certain requirements within nine months of the date of the written examination will be admitted to the examination. Applicants who meet these requirements will be given an oral interview, physical examination and written professional tests. Examinations will be held at points throughout the United States, located as centrally as possible in relation to the homes of candidates.

Entrance pay for a senior assistant without dependents is $4,053.50; with dependents, $4,489. These figures include subsistence and rental allowance.

Additional information may be obtained from the Surgeon General, U. S. Public Health Service, Washington 25, D. C., Attention: Division of Commissioned Officers.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Maryland

Baker, Robert Lee.....Baltimore
Clyman, Sidney G.....Baltimore

Massachusetts

Audet, H. H.....Newburyport
Beatty, Thomas P.....South Boston
Bennett, H. S.....Boston
Berenberg, Arnold L.....Chelsea
Blute, Robert D.....Roslindale
Borenstine, Joseph.....Boston
Browne, Edward R.....Brookline
Bush, Stewart W.....Holyoke
Callahan, D. H. Jr.....Arlington
Carpenter, Robert J. Jr.....Plainfield
Colpoys, F. L. Jr.....Brighton
Ferguson, Bruce C.....Roslindale
Garland, Merritt F. Jr.....Bradford
Giammalvo, J. T.....New Bedford
Gibbons, John F.....Lawrence
Golub, L. M.....Dorchester
Goodall, E. B. Jr.....Newton Center
Graffeo, A. J.....Medford
Green, Sidney.....Chelsea
Harrow, B. R.....Pittsfield
Horgan, J. D.....Belmont
Hutchins, Maurice C.....Malden
Land, W.....Boston
Latimer, E. L.....North Dighton
Leach, C. A. Jr.....West Peabody
Lerner, E. M. II.....Boston
McLellan, William A.....Brookline
Matzilevich, Benjamin.....Worcester
Mazmanian, Joseph.....Medford
Michel, Jean C.....Lincoln
Palken, Morton.....Brookline
Papageorge, W. G.....Dorchester
Perkins, H. A.....Winchester
Pucko, Joseph J. Jr.....Fitchburg
Sandberg, Russell G.....Worcester
Schwartz, Solomon S.....Dorchester
Silliker, Stuart Austin.....Cambridge
Sisson, Warren R. Jr.....Brookline
Sosman, John L.....Chestnut
Spitzer, M. G.....Adams
Stewart, Goodwill M.....Brockton
Williams, Harry G.....Bedford
Wolfe, Alfred Louis Jr.....Waban
Woodhouse, Charles F.....Boston
Yules, Jacob H.....Boston

Michigan

Bristol, William R.....Detroit
Cohen, Maynard M.....Detroit
DeNio, A. E. Jr.....Detroit
DeWind, L. T.....Muskegon
Estill, D. V.....Kalamazoo
Figiel, Leo S.....Detroit
Gaber, Ben.....Detroit
Harrelson, William D.....Owosso
Howell, James T.....Port Huron
Kempter, Albert H.....Grand Rapids
Kowalski, George R.....Fennville
Leach, Robert B.....Royal Oak
Lemon, B. K.....Detroit
Linkner, L. S.....Detroit
Lipnik, Morris J.....Detroit
McClellan, Robert John.....Dearborn
McCormick, Glen E.....Lansing
McCrea, J. W.....Clifford
McLane, Hugh J.....Detroit
Martin, F. A.....Belleville
Martinus, M.....Holland
Mathews, Kenneth Pine.....Ann Arbor
Nalepa, Eugene J.....Benton Harbor
Neering, James C.....Bay City
Rupe, C. E.....Detroit
Sandberg, Avery A.....Detroit
Scott, Marrion U.....Grosse Pointe
Singer, Harold.....Detroit
Trader, Kenneth N.....Detroit
Veling, William F.....Detroit
Woolfenden, J. B.....Detroit
Wooster, J. J.....Dowagiac

Minnesota

Anderson, Ray Carl.....St. Peter
Berglund, Eldon B.....Minneapolis
Bly, Chauncey G.....Northfield
Bowen, Robert L. Jr.....Hibbing
Franz, Willis M.....Mount Lake
Frey, Richard J.....St. Paul
Goldish, Robert J.....Duluth
Hauge, Erling T.....Minneapolis
Karlen, Markle.....Minneapolis
Le Bien, Wayne E.....Minneapolis
Mann, Frank D.....Rochester
Meek, Melton Price.....Winona
Mollison, Malcolm.....Faribault
Nesset, William D.....Delavan
O'Brien, William A. Jr.....St. Paul
O'Connor, Timothy D. Jr.....Renville
Ourada, Anthony L.....Walnut Grove
Pedersen, Robert L.....Minneapolis
Wente, Harold A.....Moose Lake

Mississippi

Arnold, H. L. Jr.....Meridian
Barnett, R. J.....Greenwood
Bays, R. P.....State College
Harris, Milton L.....Tunica
Lott, Hu'on Augustus.....Moselle
McDonnell, W. F. Jr.....Biloxi
McLaurin, John P. Jr.....Merigold
Ray, John E.....Rienzi
Rogers, Joseph B.....New Albany
Stewart, George B.....Carriere
Stone, Harry A.....Columbus
Taintor, C. W. III.....Clarksdale
Tatum, Frederick E.....Hattiesburg
Webb, Watts Rankin.....Gulfport
Willoughby, Dan H.....Jackson

Missouri

Adams, John P.....Elsberry
Bailey, Drennan.....University City
Connor, Samuel W.....Camdenton
Engleman, Reinhold.....St. Louis
Hale, Ralph.....Kansas City
Hall, Eugene W.....Webster Groves
Kistner, William F.....St. Louis
Kranson, Seymour J.....Independence
Mattes, Charles L. Jr.....Kirkwood
Monahan, Elmer P. Jr.....Kansas City
Nelson, Gust H. Jr.....Kansas City
Rothweiler, Robert J.....St. Louis
Van Buskirk, William C.....Kansas City
Walker, Willard B.....St. Louis
Walther, Roy A. Jr.....Overland
Wiggins, George E.....West Plains

Nebraska

Blattspieler, L. H.....Tobias
Boulden, Roger W.....Omaha
Clark, William M.....Omaha
Deffer, P. A.....Indianola
Dickerson, William J.....Butte
Donlin, R. E.....Omaha
Ehlers, W. A.....Omaha
Halley, N. B.....Scottsbluff
Hansen, K. B.....Tilden
Healy, J. P.....Omaha
Horner, George M.....Ainsworth
Ikast, D. E. N.....Gordon
Johnson, W. L.....Omaha
Kline, Nathan D.....Lincoln
Latenser, John F.....Omaha
Lauby, V. W.....Bridgeport
Lytton, G. J.....Fairbury
McFadden, H. W. Jr.....Omaha
McQuillan, William M.....Lincoln
McWhorter, Clarence A.....Omaha
Miller, Harold B.....Lincoln
Roche, Jason Bernard.....Sidney
Root, C. M.....Omaha
Smith, John E.....Omaha
Surber, E. G.....Norfolk
Yoachim, W. P. Jr.....Fairbury

Oklahoma

Becker, Fred W.....Chickasha
Berkenbile, Glen Lee.....Stillwater
Blender, John X.....Okeene
Cohen, Eugene S.....Tulsa
Downing, Joseph J.....Norman
Ford, Frederick R.....Oklahoma City
Le Neve, Robert T.....Hooker
Lincoln, Richard B.....Oklahoma City
Morgan, Carl C.....Alva
Parker, James W.....Elk City
Reynolds, Ernest W. Jr.....Tulsa
Spence, Ray E.....Pauls Valley
Stratton, Emil F.....Carnegie
Thuringer, Carl B.....Oklahoma City
Westbrook, Brock R. Jr.....Broken Bow

Pennsylvania

Anderson, W. R.....Greensburg
Baird, William Free.....Wilkinsburg
Campbell, Jack S.....DuBois
Carroll, K. M.....Lancaster
DeAntonio, Carlo P.....Scranton
Dugan, Thomas M.....Twin Rocks
Fly, Orceneth A. Jr.....Philadelphia
Grotts, B. F.....Pittsburgh
Hornick, Edward Jay.....Pittsburgh
Humes, Alexander B.....Aliquippa
Kay, J.....Philadelphia
Kay, Richard.....Philadelphia
Koch, J. C.....Scranton
Kunkel, William M. Jr.....Harrisburg
Kushner, Daniel S.....Philadelphia
Ludwig, J. S.....York
Lurting, F. W.....Pittsburgh
McNinch, James R. Jr..West Alexander
McParland, J. J. Jr.....Pittsburgh
Maher, Joseph J.....Shenandoah
Masland, R. P. Jr.....Carlisle
Medlock, James Bryce.....Pittsburgh
Pickett, M. E.....Langhorne
Powell, E. J.....Philadelphia
Prutzman, G. W.....Palmerton
Pugh, D. S.....Beaver Falls
Reisner, Lewis Carl.....Philadelphia
Reiter, Martin D.....Tarentum
Rose, Isadore.....Plymouth
Veenis, C. Y. Jr.....Wilkinsburg
Watson, Joseph H.....Philadelphia
Woldow, Asher.....Philadelphia

Utah

Stucki, John F.....Delta

Vermont

Bove, Edward R.....Rutland
Keighley, Thomas J.....Burlington
Manheim, Gilbert.....Burlington
Wheeler, Dean H.....Enosburg Falls

Virginia

Blanton, Frank Mc.....Richmond
Brooks, James W.....Winchester
Dorian, Alan L.....Alexandria
Johnson, William H.....Arlington
Melcher, George W. Jr.....Portsmouth
Sieber, Homer A.....Roanoke
Stonesifer, Paul S. Jr.....Roanoke
Zirkle, George A. Jr.....Danville

Wisconsin

Babbitt, Donald P.....Racine
Bailey, Robert W.....Wauwatosa
Bruchs, Robert V.....Wautoma
Chapman, Samuel B. Jr.....Madison
Fencil, Wayne J.....Casco
Mayer, Richard J.....Milwaukee
Norby, Richard G.....Milwaukee
Wasserburger, Richard H.....Minocqua

Philippine Islands

Nubla, T. L.....Manila
Padua, Franciso G.....Pasey Rizal City

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

County Blood Bank Opens.—The Sonoma County Community Blood Bank opened August 20. A nonprofit organization was formed, composed of physicians and other residents of the county. The blood bank is endorsed by the Sonoma County Medical Society, and its technical aspects will be under the society's direction. A service fee of not more than $7.50 a unit will be charged. Dr. Owen F. Thomas, Santa Rosa, is director of the blood bank.

Positions Open for Psychiatrists. — The California Personnel Board will conduct a nationwide examination for director of clinical services in mental institutions November 29. The applicants must have a certificate in psychiatry issued by the American Board of Psychiatry and Neurology or eligibility for examination for a certificate as evidenced by a written statement by the secretary of the board. Positions are open in a small state institution or clinic, mental hospital, a correctional institution and in the state department of mental hygiene. Applications are obtainable from the State Personnel Board in Sacramento, San Francisco and Los Angeles and must be filed not later than November 8 with the Personnel Board, 1015 L Street, Sacramento.

ILLINOIS

County Society Lectures. — The Illinois State Medical Society has arranged the following programs for county medical societies:

McHenry County Medical Society, October 11 in Spring Valley, Aaron E. Kantor, Chicago, Office Gynecology and Use and Abuse of Hormonal Treatment in Gynecology.
La Salle County Medical Society, October 13 in La Salle, Dr. Philip Thorek, Chicago, Surgery of the Colon (motion picture demonstration).
Fulton County Medical Society, October 13 in Canton, L. Martin Hardy, Chicago, Recognition and Manipulation of Malformations of the Elementary Tract in Infants and Children.
Iroquois County Medical Society, October 18 in Watseka, Leo Kaplan, Chicago, Psychosomatic Medicine.
Macon County Medical Society, October 18 in Decatur, Guy V. Pontius, Chicago, Present Status of Gastric Surgery.
Effingham County Medical Society, October 20 in Effingham, Willard O. Thompson, Chicago, Female Endocrinology.

Chicago

The Annual Belfield Lecture.—The Chicago Urological Society will present the annual William T. Belfield Memorial Lecture October 27, given by Dr. Charles Huggins, University of Chicago, on the "Quality of Urologic Tumors." All meetings for the coming year will be at the Congress Hotel.

Lectures for Laymen at Museum. — The Museum of Science and Industry is presenting a series of six free lectures on Sundays at 3 p. m. The remaining lectures, all by Chicagoans, are:

Sept. 25, Dr. Roland P. Mackay, The Successful Marriage.
Oct. 2, W. W. Bauer, How to Be Happy Though Healthy.
Oct. 9, M. Edward Davis, You and Your Change of Life.
Oct. 16, Roger A. Harvey, Progress in X-Ray Diagnosis.
Oct. 23, Carl C. Pfeiffer, A Miracle Drug Is Born.

Instruction by Television—The Lewis Memorial Maternity Hospital will use television for instruction in obstetric and gynecologic procedures in a graduate teaching program open to physicians without charge. Facilities will permit the attendance of 150. The program will be presented from 9 a. m. to 4:30 p. m., October 24-29, under the direction of Dr. Herbert E. Schmitz, chairman, department of obstetrics and gynecology, Stritch School of Medicine of Loyola University. Lectures and demonstrations will be given on twenty-seven subjects. This program will be interspersed with television demonstrations of spontaneous and instrumental deliveries and gynecologic operative procedures under saddle block anesthesia. With a number of screens in the hospital attending physicians will be able to observe details of the procedures and hear discussions carried on between operating surgeons. This televised presentation of a teaching program is made possible through the cooperation of Ciba Pharmaceutical Products, Inc., and the Radio Corporation of America. Visiting professors taking part in the program include Drs. Russell J. Moe, Minneapolis; Gerald W. Gustafson, Indianapolis; Leroy A. Calkins, Laurence-Kansas City, Kan.; J. P. Greenhill, Chicago; John Adriani, New Orleans.

Lectures on Atomic Medicine.—A series of public lectures on the relation of atomic energy to biology and medicine will be held at the Chicago Medical School on Wednesdays October 12 through November 30 at 12:30 p. m. The lectures will cover the physical principles of radiation; the effects and uses of radiation, and protection against and cure of its effects. Included in the series will be two motion picture films on the Bikini atom bomb experiment. The program is as follows:

Oct. 12, Willard F. Libby, Ph.D., University of Chicago, Radioactive Isotopes; Applications to Medicine.
Oct. 19, A. R. Goldfarb, Ph.D., Chicago Medical School, Radioactive Isotopes in Biological Research.
Nov. 2, Commander C. A. Erickson (CEC), U. S. Navy, Operation Cross Roads (Motion Pictures).
Nov. 9, Elizabeth E. Painter, Ph.D., University of Illinois Medical School, Chicago, Patho-Physiological Effects of Radiation.
Nov. 16, Leonida Marinelli, M. A., Argonne National Laboratory, Chicago, Medical Uses of Radioactive Isotopes.
Nov. 30, Austin M. Brues, Argonne National Laboratory, Chicago, Nature and Therapy of Radiation Sickness.

At the conclusion of the series the lectures will be published.

KENTUCKY

Cancer Detection Program. — A new service that will enable physicians to obtain free diagnoses of tissue for detection of cancer of indigent patients has been set up by the Division of Cancer Control of the state department of health in cooperation with the Kentucky Division of the American Cancer Society. Under the program, which has the support of the Kentucky Society of Pathologists, a doctor can send suspected tissue to any of sixteen cooperating pathologists for diagnosis.

State Medical Meeting. — The Kentucky State Medical Association will hold its annual meeting as a memorial to William A. Atchison in Owensboro October 6-8. The tentative program includes the following out-of-state speakers:

Richard H. Overholt, Brookline, Mass., The Most Favorable Internal Cancer.
Ernest E. Irons, President, American Medical Association, Chicago, Freedom of American Medicine.
Earl C. Elkins, Rochester, Minn., Treatment of Poliomyelitis.
Charles A. Doan, Columbus, Ohio, Advance in the Recognition and Therapy of the Hematologic Dyscrasias.

The Oration in Surgery, "Highlights in Urology," will be given by Dr. William R. Miner of Covington. At the annual subscription dinner Friday at 7 p. m. "Compulsory Health Insurance" will be the subject of addresses by Leone Baxter and Clem Whitaker of Chicago.

MICHIGAN

Address on British Medicine. — More than twenty-five hundred Michigan doctors heard first hand observations of the present status of European medicine when Dr. Herbert Acuff, Knoxville, Tenn., president-elect of the International College of Surgeons, delivered the annual Biddle Oration. The address was presented before the annual session and Postgraduate Conference of the Michigan State Medical Society in Grand Rapids, September 21-24. Dr. Acuff recently returned from his second postwar visit to Europe.

Dr. Wilkinson Appointed to New York University.—Dr. Charles F. Wilkinson Jr., associate director of the Kellogg Foundation's Division of Medicine and assistant professor of medicine at the University of Michigan Medical School, Ann Arbor, has been appointed professor and chairman of the department of medicine at the Post-Graduate Medical School, New York University-Bellevue Medical Center. Dr. Wilkinson will be director, Fourth Medical Division, Bellevue Hospital, and also director of the department of medicine at University Hospital. Dr. William S. Tillett remains as professor and chairman of the department of medicine, New York University College of Medicine and director of the Third Medical Division, Bellevue Hospital. Dr. Wilkinson acted as coordinator of graduate medical education at the University of Michigan Medical School, Ann Arbor, from 1946 to 1948. With the Kellogg Foundation he was in charge of the development of programs to improve instruction for physicians in rural, nonteaching hospitals. Dr. Wilkinson served in the Medical Corps of the U. S. Army from 1940 to 1946 and was awarded the Bronze Star Medal. He has served as assistant professor of internal medicine at the University of Michigan Medical School and research fellow at University Hospital, Ann Arbor. He took his internship and residency at the same hospital following graduation from Emory University School of Medicine, Atlanta, in 1937.

MISSOURI

Additions to Medical Center.—Construction of a $900,000 building for research in the basic sciences related to cancer has been started in the Washington University Medical Group. The new building will connect the north and south buildings of the School of Medicine. Two other buildings were previously announced as additions to the medical center: one, the million dollar David P. Wohl Memorial Hospital, and the other, a new Barnard Free Skin and Cancer Hospital, for which funds will come from the sale of the present Barnard Hospital at 3427 Washington Avenue and from private gifts.

NEW MEXICO

Two Human Cases of Plague.—On August 3, a case of plague in a 10 year old boy was reported in Cerro, Taos County, N. Mex., with onset on July 29. Later a case was reported in a 37 year old man, in Sandoval County. These are the first reports of plague in human beings in the state, but the infection was found in fleas from prairie dogs in Taos County in April of this year, in Sandoval County in June of this year and in fleas from grasshopper mice in May of 1943. Dr. Crawford H. Douthirt, director of County Health Administration for the New Mexico Department of Public Health, reports that the 10 year old boy has recovered and that the Sandoval County man is getting along satisfactorily.

TEXAS

Industrial Health Conference.—The Texas State Department of Health in cooperation with the Houston Chamber of Commerce and other agencies is sponsoring an Industrial Health Conference in Houston October 6-7 at the Rice Hotel. The conference is designed for industrial physicians, nurses, safety engineers and public health workers. The program, which begins at 2 p. m., is as follows:

Mr. Manfred Bowditch, New York, Industrial Health Programs Pay Dividends.
Allan J. Fleming, Wilmington, Del., Present Status of Industrial Toxicology and Its Application.
Allen D. Brandt, D.Sc., Bethlehem, Pa., Control of Environmental Industrial Health Hazards.
Shields Warren, Boston, Industrial Health in an Atomic Era.
Sherman S. Pinto, Denver, Medical and Safety Aspects of Some Heavy Metals.
F. Ruth Kahl, R.N., Washington, D. C., Role of the Nurse in the Industrial Health Program.
Helmuth H. Schrenk, Ph.D., Washington, D. C., Public Health Aspects of Atmospheric Pollution.
Don D. Irish, Ph.D., Midland, Mich., Safe Use of Common Chemicals in the Plant and in the Home.
Paul R. Hawley, Chicago, Management's Responsibility for Prepaid Medical and Hospital Plans.

VERMONT

University Appointment.—Dr. William G. Young, recently of Hartford, Conn., has been appointed assistant professor of psychiatry in the college of medicine at the University of Vermont, where he will be in charge of the mental hygiene clinics. Dr. Young received his M.D. degree from the University of Toronto Faculty of Medicine in 1930. He is a member of the American Board of Psychiatry and Neurology. He has been on the staffs of Massachusetts General Hospital, Boston; Toronto General Hospital, and the Institute of Living, Hartford, Conn., and was instructor in psychiatry at the College of Physicians and Surgeons, Columbia University, New York.

VIRGINIA

Stuart-McGuire Lectures.—The annual Stuart McGuire Lecture series and a symposium on hematology will be presented September 28-October 1 at the Egyptian Building of the Medical College of Virginia, Richmond. Sir Lionel E. H. Whitby, regius professor of physic, University of Cambridge, England, will present three lectures at 8:30 p. m.: "The Physiology of Hemopoiesis," "Dyshemopoiesis from Nutritional and Specific Deficiencies" and "Dyshemopoiesis from Noxious Agents." Out-of-state physicians who will speak at the symposium are as follows:

William P. Murphy, Boston, Treatment of Pernicious Anemia.
Louis K. Diamond, Boston, Anemias Resulting from Rh Incompatibility.
Thomas H. Ham, Boston, Acquired Hemolytic Anemia.
Armand J. Quick, Milwaukee, Prothrombin.
Nathan Rosenthal, New York, Types of Leukemia.
Frank H. Bethell, Ann Arbor, Mich., Anemias of Pregnancy.
David A. Karnofsky, New York, Clinical Application of Nitrogen Mustards.
Cyrus C. Sturgis, Ann Arbor, Mich., Use of Iron in Anemia.
Thomas Fitz-Hugh Jr., Philadelphia, Leukopenia.
C. Lockard Conley, Baltimore, Myelomatosis.
Francis H. L. Taylor, Ph.D., Boston, Recent Advances in Hemophilia.
Charles A. Doan, Columbus, Ohio, New Methods in the Treatment of Leukemia.
Donald W. Bortz, Cleveland, Treatment of Polycythemia.

A charge of $15 a day will be made for the series except to members of the faculty and students of the Medical College of Virginia and the University of Virginia and to all members of the house staff of any hospital.

WEST VIRGINIA

Appoint Liaison Committee.—Dr. Delivan A. MacGregor, Wheeling, and Dr. Frank V. Langfitt, Clarksburg, will serve as chairman and co-chairman, respectively, of a liaison committee between the West Virginia State Medical Association and the Board of Governors of West Virginia University. Dr. Frank J. Holroyd of Princeton has been named the third member. One of the prime objects of the committee is to establish closer relations between the association and the board of governors and a better understanding of the needs of the medical profession, especially in the field of medical education.

Special Society Elections.—The following special societies held meetings in conjunction with the West Virginia State Medical Association early in August and selected officers: The West Virginia Society of Anesthesiologists chose Drs. John F. Morris, Huntington, president, and Arkie B. Bowyer, Charleston, secretary-treasurer. The West Virginia Obstetrical and Gynecological Society chose Drs. Charles L. Goodhand, Parkersburg, president and Clarence H. Boso, Huntington, secretary-treasurer. The Association of Pathologists of West Virginia elected Drs. Marshall W. Sinclair, Bluefield, president, and Milford L. Hobbs, Morgantown, secretary-treasurer. ——The West Virginia Heart Association chose Drs. John E. Stone of Huntington as president and Wade H. Rardin, Beckley, treasurer; Dr. W. Frederick Richmond, Beckley, was reelected secretary. The House of Delegates of the State Medical Association voted to accept the scientific assembly of the State Heart Association as an affiliate, instead of the heart association itself. The change was made because, under the reorganization plan, laymen are admitted to membership in the heart association on an equal basis with members of the medical profession.

GENERAL

Diabetes Week.—The American Diabetes Association is sponsoring a diabetes week October 10-16. This is a continuation of the program inaugurated last year, when Diabetes Detection Week was observed December 6-12. The drive is meant to concentrate attention on testing urine of patients either in doctors' offices or in detection centers.

Medical Art Reception and Tea.—The International College of Surgeons will entertain at a reception and tea October 23 at 3 p. m. at the home of the college, 1516 Lake Shore Drive, on the occasion of the unveiling of the portraits of its presidents and the presentation of works of medical arts and sculpture of Dr. Skevos Zervos, Athens, Greece. In the evening the college will hold a banquet at the Blackstone Hotel.

Mileage Death Rate at All-Time Low.—The National Safety Council reported August 31 that for the first six months of 1949 the mileage death rate on the nation's streets and highways was 6.8. This is not only an all-time low mark but the first time in the history of such records that a half-year rate has been below 7 deaths per 100,000,000 vehicle miles. The toll of lives at the end of seven months was 16,540, 1 per cent under the 16,700 death toll at the end of July last year.

Dr. Thompson Wins Hess Prize.—Dr. Howard T. Thompson, University of Rochester (N. Y.) School of Medicine and Dentistry, is winner of the Elmer Hess Prize, awarded through the Northeastern Section of the American Urological Association. The award carries with it a cash prize of $100 and presentation of the awarding paper before the society at Lake of Bays, Ontario, Canada, early in September. His report is on animal experiments in which the ureters were transplanted into an isolated sigmoid loop of the bowel, which was later used to replace the bladder.

Warning to Hospitals and Physicians.—Mount San Rafael Hospital, Trinidad, Colo., reports that a man about 42 is likely to make application, through some Jewish organization, for medical care and hospitalization for a pulmonary condition. He is said to claim that he is a fireman in the Merchant Marine, that he was held as a Japanese prisoner during the war and that he has a fungous infection of the lung for which he has been operated on. He has a scar on the posterior chest wall and a smaller scar on the anterior surface of the chest. He is about 5 feet 6 inches (168 cm.) tall, weighing about 150 pounds (68 Kg.), has black, short-cropped hair tinged with gray and has rather prominent nostrils; his nose appears to have been broken and poorly set, and his teeth are irregular. He talks with a slight lisp and definite accent, is well dressed and is a convincing talker. He states that he is without sufficient

funds to pay the hospital bill until he can get in touch with his bank and offers checks in payment of his bills; he also is likely to offer a sum of money in the form of a check as a contribution to the hospital. These checks are returned with the statement "no such bank." This man is evidently traveling over the country. If he is contacted, notify the District Attorney's Office, Trinidad, Colo.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the National Office of Vital Statistics, U. S. Public Health Service.

Division and State	Week Ended Sept. 10, 1949	Week Ended Sept. 11, 1948	Median Expec.	Jan. 1 to Sept. 10, 1949	Jan. 1 to Sept. 11, 1948	Total* March 19 to Sept. 10, 1949	Total* March 20 to Sept. 11, 1948
New England States:							
Maine	47	9	5	308	28	308	28
New Hampshire	18	3	3	131	13	131	13
Vermont	21	1	2	78	15	76	14
Massachusetts	145	13	30	1,076	111	1,076	108
Rhode Island	10	1	1	77	1	77	1
Connecticut	43	7	9	334	69	331	68
Middle Atlantic States:							
New York	336	95	101	3,449	676	3,429	660
New Jersey	105	50	50	808	371	772	364
Pennsylvania	77	51	51	424	362	414	351
East North Central States:							
Ohio	178	79	79	1,070	618	1,064	609
Indiana	68	33	28	753	229	743	219
Illinois	191	71	87	1,995	516	1,979	509
Michigan	196	57	55	1,780†	326	1,760†	320
Wisconsin	82	48	20	598	238	584	238
West North Central States:							
Minnesota	128	101	48	1,207	558	1,168	550
Iowa	75	81	25	768	462	755	449
Missouri	75	32	31	993	150	982	150
North Dakota	23	8	7	364	73	360	73
South Dakota	44	10	2	248	103	226	103
Nebraska	60	56	11	355	361	342	356
Kansas	47	31	13	494	169	468	166
South Atlantic States:							
Delaware	2	7	6	35	104	33	103
Maryland	5	7	7	110†	39	101†	38
District of Columbia	11	13	4	59	73	58	73
Virginia	21	46	30	211	335	201	333
West Virginia	27	28	9	254	106	247	101
North Carolina	4	111	11	163	2,007	136	1,983
South Carolina	3	20	4	72	278	59	270
Georgia	24	12	4	138	163	130	162
Florida	12	9	4	167	185	146	168
East South Central States:							
Kentucky	41	12	12	394	131	386	128
Tennessee	32	13	13	371	229	365	222
Alabama	12	13	5	171	141	158	129
Mississippi	28	12	9	248	99	237	97
West South Central States:							
Arkansas	34	7	7	794	102	783	100
Louisiana	6	8	7	158	95	146	87
Oklahoma	86	37	10	957	271	950	265
Texas	65	37	25	1,734	1,365	1,643	1,344
Mountain States:							
Montana	13	7	6	46	41	45	31
Idaho	28	2	2	324	86	311	59
Wyoming	8	5	3	76	61	76	61
Colorado	77	12	12	405	69	403	67
New Mexico	7	3	3	115	52	114	50
Arizona	6	9	1	112	81	101	80
Utah	12	2	2	122	39	106	36
Nevada	..	..	..	11	3	11	2
Pacific States:							
Washington	34	20	20	342	137	297	119
Oregon	17	12	11	123	78	107	62
California	121	205	30	1,439	2,246	1,150	2,314
Total	2,705	1,526	.....	26,461	14,183	25,545	13,833
Median, 1944-1948	.....	.....	1,498	10,972		10,709	

* Last two columns show reported incidence since approximate seasonal low: 25 weeks.

† Corrections (made in cumulative totals): Michigan—Deduct 1 case each week ended August 20 and August 27. Maryland—Add 18 cases, onsets in July and August, weeks not specified.

Academy of Ophthalmology and Otolaryngology.—The annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held at the Palmer House, Chicago, October 9-14, under the presidency of Dr. Conrad Berens, New York. At the joint session on Monday Sir Stewart Duke-Elder, London, England, will speak on "The Physiology of the Intraocular Fluids and Its Clinical Significance." Invited speakers for the symposium on allergy are Dr. John M. Sheldon, Ann Arbor, Mich., who will speak on "Immunologic Aspects of Allergy" and Dr. Samuel M. Feinberg, Chicago, "Drugs in Allergy." Section meetings in otolaryngology and ophthalmology will follow. The Jackson Memorial Lecture will be given Wednesday morning by Dr. William L. Benedict, Rochester, Minn., on "Diseases of the Orbit," and in the afternoon Dorothy Wolff, Ph.D., New York, will deliver the Wherry Memorial Lecture on "Vascular Pathology in the Temporal Bone." At the dinner Wednesday at 7 p. m. Sir Stewart Duke-Elder will speak on the national medical service in England.

Cerebral Palsy Clinics.—Dr. Meyer Perlstein of Chicago held cerebral palsy clinics for the Michigan Society for Crippled Children in Jackson September 20, and will hold others in Battle Creek October 18-20. He will also hold clinics for the medical society in Portland, Ore., September 26 and will take part in the dedication of a new school for crippled children in Eugene, Ore., September 27. He will hold cerebral palsy clinics for the Idaho Society for Crippled Children and the Idaho Medical Society in Boise September 28-29 and for the University of Idaho in Pocotella on September 30.

International College of Surgeons.—The United States Chapter of the International College of Surgeons will hold its assembly at Haddon Hall, Atlantic City, November 8-11 under the presidency of Dr. Custis L. Hall, Washington, D. C. The meeting will be preceded by surgical clinics in Philadelphia Hospitals November 7. In addition to numerous papers to be presented at the general assembly, there will be section meetings on urology and eye, ear, nose and throat. Convocation will take place November 10, and the meeting will be addressed by Dr. Elmer L. Henderson, Louisville, Ky., President-Elect, American Medical Association, and Dr. George F. Lull, Chicago, Secretary-General Manager, American Medical Association. The presidential address will be delivered at the banquet November 11 at 7:30 p. m.

Survey of Japanese Exposed to Atomic Bomb.—The committee on ophthalmology of the National Research Council has chosen Dr. David G. Cogan, director of the Howe Laboratory of Ophthalmology and associate professor of ophthalmology at Harvard Medical School, Boston, and Dr. S. Forrest Martin, assistant surgeon at the Massachusetts Eye and Ear Infirmary, Boston, to conduct a survey of persons who were exposed to the atomic bomb explosions at Nagasaki and Hiroshima. The project is to last three months, beginning September 3, when Dr. Cogan and Dr. Martin flew to Japan. According to the National Research Council, impetus has been given to this study in recent months because of the finding of cataracts in a number of persons who were and are working with cyclotrons and other radiant-energy producing processes.

Meeting of Gastroenterologists.—The National Gastroenterological Association will hold its scientific session at the Sommerset in Boston, October 24-26. Among the speakers will be Drs. Owen H. Wangensteen, Minneapolis; Frank H. Lahey, Maxwell Finland and William B. Castle, Boston; George Crile Jr., Cleveland, and John M. T. Finney Jr., Baltimore. Lord Alfred Webb-Johnson, president of the Royal College of Surgeons, London, England, will be a guest of honor at the banquet Tuesday evening, and the winner of the association's 1949 prize award contest for the best unpublished contribution on gastroenterology or an allied subject will receive the prize of $100 and a Certificate of Merit. On October 27-29 the association is sponsoring a course in gastrointestinal surgery at Boston City Hospital. Information may be obtained by writing to the Secretary, National Gastroenterological Association, 1819 Broadway, New York 23.

CORRECTION

"Treatment of Paraplegia Resulting from Trauma to Spinal Cord."—Dr. L. W. Freeman, author of the article by this title in THE JOURNAL, July 23, 1949, writes that the sentence on page 1017, first column, twenty-eighth line, should read as follows: It is certainly not true that burning pain "dies out" [45] and that cordotomy is unsuccessful in its relief.[50]

Marriages

RICHARD WALTER GENTRY, San Bernardino, Calif., to Miss Marjorie Ann Wilson of Lebanon, Ore., in San Francisco, June 18.

THOMAS JEFFERSON ANDERSON JR., Greensboro, Ala., to Miss Betty June Kilpatrick of Atlanta, July 19.

NICHOLAS N. PETROCHKO, Olyphant, Pa., to Miss Helen Dobrian of Albany, N. Y., July 16.

H. P. HANNA to Miss Berdie Ruth Watson, both of Birmingham, Ala., August 1.

BYRON F. HARPER, Atlanta, to Miss Rose Marie Raining of St. Louis, July 30.

Deaths

Henry Charles Barkhorn ✦ Newark, N. J.; born in 1885; Cornell University Medical College, New York, 1907; past president of the Essex County Medical Society, the Practitioners Club of Essex County, the Doctors Club and the Cornell Medical Alumni Association; active in the functions of the state medical society, serving many years as chairman of its publication committee; treasurer from 1922 to 1935, past vice president, president, chairman of the public health and education committee and for many years chairman of the board of trustees of the Academy of Medicine of Northern New Jersey, which in 1944 presented him with its Edward J. Ill Award; served on the boards of the Welfare Federation and of the Essex County Tuberculosis League; fellow of the American College of Surgeons; affiliated with the Newark Eye and Ear Infirmary, Newark City Hospital, Newark Beth Israel Hospital, St. James Hospital, Babies' Hospital-Coit Memorial and Hospital of St. Barnabas and for Women and Children in Newark, Essex County Hospital for Contagious Diseases, Belleville, Fitkin Memorial Hospital, Neptune, Passaic (N. J.) General Hospital and the Hackensack (N. J.) Hospital; editor of the *Bulletin of the Essex County Medical Society* for twelve years; died July 27, aged 63, of coronary thrombosis.

Robert Vivian Funsten ✦ Charlottesville, Va.; born in Portsmouth, Va., Dec. 25, 1892; University of Virginia Department of Medicine, Charlottesville, 1918; secretary of the Section on Orthopedic Surgery of the American Medical Association from 1935 to 1938, when he became vice chairman and chairman, 1939-1940; professor of orthopedic surgery at his alma mater; served on the faculty of the State University of Iowa College of Medicine in Iowa City from 1919 to 1922, following which he practiced in Detroit for ten years; served in France with the U. S. Army during World War I; specialist certified by the American Board of Orthopaedic Surgery; fellow and formerly vice president of the American Academy of Orthopaedic Surgeons; past president of the Virginia Orthopedic Association; member of the American Orthopaedic Association; affiliated with the Martha Jefferson Hospital and Sanitarium and the University of Virginia Hospital; member of the Council of Warm Springs Foundation; co-author of "Orthopedic Nursing"; died July 25, aged 56, of cerebral hemorrhage.

George Dunlap Lyman, San Francisco; born in Virginia City, Nev., Dec. 12, 1882; Columbia University College of Physicians and Surgeons, New York, 1909; lecturer in pediatrics, emeritus, Stanford University School of Medicine; member of the American Medical Association; fellow of the American Academy of Pediatrics; chief of the pediatric service at St. Luke's Hospital; on the visiting staffs of St. Mary's and Stanford University hospitals; past president of the California Historical Society; on the editorial board of *The Bulletin* of the San Francisco County Medical Society, serving as chairman of the society's committee on history and obituaries; author of "Care and Feeding of the Infant," published in 1915, second edition in 1922, "Saga of the Comstock Lode," which won the Commonwealth Club's gold medal in 1934; "John Marsh, Pioneer," published in 1930, and "Ralston's Ring," published in 1937; died July 26, aged 66, coronary artery disease and myocardial infarction.

John Augustine Conway ✦ Hornell, N. Y.; born in Rexville, N. Y.; Jan. 21, 1874; University of Buffalo School of Medicine, 1903; Associate Fellow of the American Medical Association; fellow of the American Public Health Association; past president of the Steuben County Medical Society; past chairman of the public health section of the Medical Society of the State New York; during World War I served as epidemiologist with the rank of captain at Camp Humphries, Va.; on Jan. 1, 1946, resigned as district health officer with headquarters in Hornell, concluding thirty-one years' service in the state department of health; one of the first six physicians appointed to the department staff in 1914 under the title of "district sanitary supervisor," a position corresponding to "district state health officer"; for many years served the counties of Allegany, Chemung and Steuben; affiliated with St. James Mercy Hospital; died July 28, aged 75, of coronary disease.

Robert Lee Nourse ✦ Boise, Idaho; born Cloverport, Ky., Sept. 27, 1864; Rush Medical College, Chicago, 1889; an Associate Fellow of the American Medical Association and in 1907 a member of its House of Delegates; secretary of the Idaho State Board of Medical Examiners from 1899 to 1905, when he became president of the Idaho State Medical Association; specialist certified by the American Board of Otolaryngology; fellow of the American College of Surgeons; for many years medical examiner for the Civil Aeronautics Administration and the United Air Lines; on the staffs of St. Luke's and St. Alphonsus hospitals; died June 25, aged 84, of coronary occlusion with myocardial infarction.

Hagop G. Barsumian ✦ Lancaster, Pa.; Jefferson Medical College of Philadelphia, 1904; affiliated with Lancaster General Hospital, where he died June 27, aged 74, of coronary heart disease.

George Edward Black, Akron, Ohio; Eclectic Medical College, Cincinnati, 1909; member of the American Medical Association; served during World War I; affiliated with St. Thomas, City, Peoples, and Children's hospitals; died June 28, aged 62, of pulmonary embolism.

Guy Robert Blackburn ✦ Fort Madison, Iowa; Chicago College of Medicine and Surgery, 1917; served on the staff of the Atchison, Topeka and Santa Fe Railway Employees Hospital, Topeka, Kan.; died June 20, aged 54, of cerebral hemorrhage.

Harvey M. Bourn, Tague, W. Va.; Eclectic Medical Institute, Cincinnati, 1891; died in Fort Pierce, Fla.; June 27, aged 87, of cardio vascular renal disease, arteriosclerosis and hypertension.

James Everette Burgman ✦ Springfield, Ohio; Indiana University School of Medicine, Indianapolis, 1918; specialist certified by the American Board of Otolaryngology; fellow of the American Academy of Ophthalmology and Otolaryngology; served as a lieutenant commander in the Navy during World War I; died in the Appalachian Hall Hospital, Asheville, N. C., June 30, aged 54, of coronary thrombosis.

Leland L. Butcher Jr., Lebanon, Mo.; Harvard Medical School, Boston, 1947; certified by the National Board of Medical Examiners; interned at the Presbyterian Hospital in New York; served with Children's Hospital in Boston; drowned at Nantucket, Mass., June 19, aged 25.

Albert Edward Cobb ✦ Canaan, Conn.; Yale University School of Medicine, New Haven, 1898; died in the Sharon (Conn.) Hospital June 30, aged 76, of mesenteric thrombosis.

Arthur John Denman, Narberth, Pa.; University and Bellevue Hospital Medical College, New York, 1913; member of the American Medical Association; served during World War I; died June 24, aged 61.

Thomas Yule Dorwart, Lexington, Neb.; Creighton University School of Medicine, Omaha, 1923; member of the American Medical Association; affiliated with Lexington Community Hospital; died June 18, aged 51, of cerebral hemorrhage.

Mirza Phillip Du Comb, Patoka, Ill.; Barnes Medical College, St. Louis, 1905; member of the American Medical Association; served on the staffs of Mark Greer Hospital in Vandalia and St. Mary's Hospital in Centralia; died June 12, aged 75, of coronary thrombosis.

Burton Wright Egan, Logansport, Ind.; Medical College of Indiana, Indianapolis, 1904; member of the American Medical Association; specialist certified by the American Board of Otolaryngology; served on the staff of St. Joseph's Hospital, where he died June 30, aged 72, of coronary occlusion.

John H. Gilligan, Green River, Wyo.; American Medical College, St. Louis, 1882; died June 30, aged 92, of pneumonia.

Thomas Paunall Govan, Pawhuska, Okla.; University of Louisville (Ky.) Medical Department, 1910; served during World War I; affiliated with the Pawhuska Municipal Hospital; died in Research Hospital, Kansas City, Mo., June 29, aged 70, of carcinoma.

Robert Bruce Greer ✦ Butler, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; past president of the Butler County Medical Society; fellow of the American College of Surgeons; surgeon emeritus of the Butler County Memorial Hospital; consulting surgeon, Pennsylvania Railroad and Baltimore and Ohio Railroad; chairman emeritus and for twenty-nine years chairman of the Butler County Chapter of the American Red Cross; died June 17, aged 74, of pneumonia.

William Smith Gregory, New York; New York Homeopathic Medical College and Flower Hospital, New York, 1911; died May 16, aged 60.

George Gullotta, Corona, N. Y.; Regia Universita degli Studi di Roma, Facolta di Medicina e Chirurgia, Italy, 1936; member of the American Medical Association; served during World War II; died June 20, aged 41.

Robert J. Heffley, Berlin, Pa.; Medico-Chirurgical College of Philadelphia, 1898; member of the American Medical Association; died May 8, aged 77, of cerebral thrombosis.

William Joseph Hemphill, North Loup, Neb.; the Hahnemann Medical College and Hospital, Chicago, 1902; member

of the American Medical Association; died in Omaha June 11, aged 75, of heart disease.

Ella Allen Hollis, Santa Barbara, Calif.; Medical College of Indiana, Indianapolis, 1890; died May 20, aged 91, of congestive heart failure.

Todd William Keith ✦ Harrisville, W. Va.; University of Louisville (Ky.) School of Medicine, 1916; formerly county health officer and county coroner; served during World War I; affiliated with St. Joseph Hospital in Parkersburg, where he died June 21, aged 66, of coronary occlusion.

Englebert August Ketterer, Montfort, Wis.; Northwestern University Medical School, Chicago, 1903; served during World War I; affiliated with Dodgeville General Hospital and St. Joseph Hospital, Dodgeville, where he died June 29, aged 71, of coronary occlusion and myocardial infarction.

John C. Lardner, Fort Scott, Kan.; Kansas Medical Department, Medical Department of Washburn College, Topeka, 1902; member of the American Medical Association; served during World War I; at one time affiliated with the Veterans Administration in Oklahoma City; died in Mercy Hospital June 28, aged 82, of arteriosclerosis.

G. Carville McCormick, Tampa, Fla.; University of Maryland School of Medicine, Baltimore, 1890; member of the American Medical Association and the Medical and Chirurgical Faculty of Maryland; died in the Municipal Hospital June 19, aged 84, of arteriosclerotic heart disease.

Joseph J. Meredith, Cleveland; Missouri Medical College, St. Louis, 1893; member of the American Medical Association and the Missouri State Medical Association; died June 10, aged 84, of arteriosclerosis.

John Wesley Munro, Syracuse, N. Y.; University of Buffalo School of Medicine, 1903; died in the People's Hospital June 15, aged 72, of coronary thrombosis.

Thomas Albert Neal ✦ Orlando, Fla.; Atlanta College of Physicians and Surgeons, 1903; died June 22, aged 74.

Elmer Harper Noel, Memphis, Tenn.; University of Arkansas School of Medicine, Little Rock, 1941; interned at St. Luke's Hospital in Duluth, Minn.; served during World War II; died in the Kennedy Veterans Hospital June 26, aged 37, of traumatic myelopathy and bilateral pyonephrosis.

Arthur Herman Pannenborg ✦ Chicago Heights, Ill.; University of Louisville (Ky.) Medical Department, 1904; formerly city alderman, city commissioner and city health officer; affiliated with St. James Hospital, where he died June 30, aged 69, of cerebral thrombosis.

Arthur Douglas Parker, Norfolk, Va.; Columbia University College of Physicians and Surgeons, New York, 1921; served in the U. S. Naval Reserve during World War II; affiliated with the Norfolk Venereal Disease Clinic; served on the staffs of Norfolk General Hospital, Norfolk Memorial Hospital and at St. Vincent's Hospital, now known as De Paul Hospital, where he died June 18, aged 52, of coronary thrombosis.

Ray Howard Parker ✦ Hunnewell, Mo.; St. Louis College of Physicians and Surgeons, 1917; affiliated with Levering Hospital; served during World War I; a member of the board of education and board of health; died in Blessing Hospital, Quincy, Ill., June 14, aged 60, of carcinoma.

Frank Byron Perkins, Manchester, N. H.; Dartmouth Medical School, Hanover, 1877; member of the American Medical Association; died June 21, aged 93.

William H. Pickett, Louisville, Ky.; Louisville National Medical College, Medical Department State University, 1898; died in the Red Cross Hospital June 24, aged 74.

Joseph Price ✦ Morgan, Utah; Columbia University College of Physicians and Surgeons, New York, 1915; member of the Medical Society of the State of New York; during World War I served overseas with the medical corps of the U. S. Army; at one time practiced in New York City, where he was medical consultant to the Consolidated Edison Company and Bendix Aviation, and on the staffs of Lutheran, St. Elizabeth's, St. Clare's, City and Gouverneur hospitals; died in St. Benedict's Hospital, Ogden, July 12, aged 57, of coronary thrombosis.

James Joseph Purtell ✦ Wauwatosa, Wis.; Marquette University School of Medicine, Milwaukee, 1940; served in the U. S. Naval Reserve during World War II; affiliated with Misericordia Hospital in Milwaukee and Milwaukee County Hospital; president of the Marquette University Medical School Foundation; died June 18, aged 36, of a skull fracture received in an automobile accident.

Richard Andrew Reiss ✦ Senior Assistant Surgeon, U. S. Public Health Service, New York; Long Island College of Medicine, Brooklyn, 1946; commissioned in the public health service in July 1948, when he became deputy chief of internal medicine at the Public Health Service Outpatient Clinic in San Pedro, Calif.; certified by the National Board of Medical Examiners; killed near Galesburg, Ill., June 26, aged 27, in an automobile accident while enroute from California to Framingham, Mass., where he was to take up a new assignment.

Wilbur Berry Roads ✦ Hillsboro, Ohio; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; served as chief of staff of Highlands Community Hospital; died June 17, aged 68, of coronary thrombosis.

Alfred Elijah Perkins Rockwell ✦ Shrewsbury, Mass.; Boston University School of Medicine, 1899; died in the Memorial Hospital, Worcester, June 19, aged 79, of carcinoma of the rectum with metastases to the liver.

Morris Rubinstein ✦ Whipple, Ariz.; Fordham University School of Medicine, New York, 1920; member of the Medical Society of the State of New York, American Trudeau Society and the American Society of Physical Medicine; chief of physical medicine at the Veterans Administration Center; died June 21, aged 53, of coronary occlusion.

William Henry Rumpf, Faribault, Minn.; Christian-Albrechts-Universität Medizinische Fakultät, Kiel, Prussia, Germany, 1891; member of the American Medical Association; affiliated with St. Lucas Evangelical Deaconess Hospital; died June 26, aged 82, of chronic hypertensive heart disease.

Clarence Frederick Schubert ✦ San Francisco; Johns Hopkins University School of Medicine, Baltimore, 1941; member of the Ohio State Medical Association; died in June, aged 43, of cardiac failure, hypertension and tuberculosis.

Morris Carlton Snitkoff ✦ Brooklyn; Cornell University Medical College, New York, 1931; assistant physician at Jewish Hospital; served during World War II; died June 2, aged 43, of brain tumor.

William Edgar Stewart, Portland, Ore.; Rush Medical College, Chicago, 1905; served in France during World War I; died in Emanuel Hospital June 26, aged 69, of arteriosclerotic heart disease.

William Howard Thomas, Jacksonville, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1914; died June 10, aged 60.

Claude Tyson Vickers, Winnsboro, Texas; Atlanta College of Physicians and Surgeons, 1913; died June 17, aged 66, of cerebral hemorrhage.

Ray Marcus Waltz, Salem, Ore.; University of Oregon Medical School, Portland, 1916; member of the American Medical Association; died in Salem Memorial Hospital, June 2, aged 62, of cerebral hemorrhage.

Charles Wallace Webb, Newark, N. Y.; Johns Hopkins University School of Medicine, Baltimore, 1909; member of the American Medical Association; for many years medical director of the Newark (N. Y.) Hospital; formerly associated with the Clifton Springs (N. Y.) Sanitarium; served as surgeon at Newark State School; died July 6, aged 71, of coronary disease.

Frederic Beall West, Los Angeles; Barnes Medical College, St. Louis, 1899; died in June, aged 79.

James Franklin Whitwell ✦ Buffalo; University of Buffalo School of Medicine, 1890; past president of the Erie County Medical Society; member of the Buffalo Academy of Medicine; for many years affiliated with Deaconess Hospital, where he died June 17, aged 82, of arteriosclerotic heart disease.

Edward Denison Williams, Easthampton, Mass.; Harvard Medical School, Boston, 1894; member of the American Medical Association; vice president and member of the board of directors of the First National Bank, of which he had been president for many years; on the staff of the Cooley Dickinson Hospital, Northampton, where he died June 25, aged 80, of arteriosclerosis and hemiplegia.

William Caldwell Wilson, Warren Center, Pa.; Columbia University College of Physicians and Surgeons, New York, 1900; veteran of the Spanish-American War and World War I; died in the Veterans Administration Hospital, Staten Island, N. Y., June 17, aged 74.

Mara Lois Smith Wingate, Shaker Heights, Ohio; Cleveland University of Medicine and Surgery, 1897; died in St. Luke's Hospital, Cleveland, June 25, aged 83, of respiratory failure and traumatic shock.

John P. Yeargain, Irondale, Mo.; Barnes Medical College, St. Louis, 1904; member of the American Medical Association; served on the staff of Bonne Terre (Mo.) Hospital; for many years member of the board of education; vice president of the Irondale Bank; died June 17, aged 73, of cerebral hemorrhage.

Foreign Letters

ITALY

(From Our Regular Correspondent)

FLORENCE, July 30, 1949.

Intraosseous Anesthesia by Means of Thiopental Sodium

Before the Neapolitan Surgical Society Professor Majone reported on research carried out by him and Dr. Larusso to demonstrate the occasional damage inflicted on the blood and bone marrow by thiopental sodium (pentothal sodium®) when used for intraosseous anesthesia.

The results of numerous experiments were as follows: 1. There were no noteworthy changes in the hemoglobin, while the red blood corpuscles were slightly diminished and the white corpuscles showed a definite and progressive increase, with the maximum reached at the second hour after the start of the experiment. A percentual increase in polymorphonuclear cells was observed simultaneously. 2. The study of the bone marrow demonstrated changes consisting mainly in an increase in all the immature elements and particularly in those of the white series. This increase reached its maximum within three hours. Noteworthy is the increase in histoid elements and in reticuloendothelial cells. 3. The processes which, in chronologic order, characterized the damage done to the marrow were proliferation of the medullary elements, hemorrhage, edema and cellular atrophy. There may be observed also regression and degeneration of the megakaryocytes, hyaline degeneration of the tissues supporting the bone marrow and dilatation of the vessels with thickening of the walls 4. Changes observed with regard to the bones included hemorrhagic extravasation of the spongy tissue and regressive processes of the cartilage of conjugation. 5. All the changes observed are completely reversible. Those concerning the hematic and peripheral crasis receded after twelve to twenty-four hours; the histologic changes of the marrow and of the bones were restored to normal after two months. 6. Because the lesions of the bones and of the marrow occur only in the area where the injection was made and because they are reversible, they do not contraindicate the use of intraosseous anesthesia with thiopental sodium.

Obstetric and Gynecologic Society

The Lombardic Obstetrical and Gynecologic Society met under the chairmanship of Professor Vercesi. Professor Fumagalli of Milano presented new points of view on the structure of the genital passages of women. He discussed the architecture of the tunica muscularis of the fallopian tube and of the uterus based on data collected in research carried out by him and his co-workers. Concerning the fallopian tube, the speaker demonstrated that the most recent morphologic reports are the only ones to justify the peculiar contractile activity of this organ which has been demonstrated on roentgenologic examination.

Concerning the myometrium, the speaker criticized the concept according to which the smooth musculature is made up by bunches of spiral fibers; he then demonstrated that, in pregnancy as in the uterus at rest, the musculature has a disposition to lamellae, relatively independent from one another, which can slip one over the other, thus determining the enlargement of walls of the organ without the occurrence of tension of the muscular elements and without disturbance of the basal architecture.

In discussing recent research on the structure of the vessels of the endometrium and myometrium in the menstrual cycle, the speaker stressed the vascular phenomena in the various phases of the cycle. He concluded that the myometrium offers an answer to the two concepts, that of a regulatory organ of the vascular hydrodynamics and that of an organ with mechanical function (with tension and expulsion of the fetus).

Professor Giudici presented a preliminary report on the relation of estrus-producing compounds and progesterone and the contractile function of the myometrium.

He discussed the histologic observations of the effect of the ovarian hormones in relation to dose, to chemical structure, to the duration of their administration to guinea pigs during the period preceding puberty, to adult and to castrated animals, in the various phases of the estrual cycle. The results justify consideration of the possibility of direct action of the two hormones (estrus-producing compounds and progesterone) on the contractility of the myometrium and a new hypothesis concerning the origin of fibromyomas, which may not be neoplasms but dysplasias conditioned by a lack of equilibrium between the estrus-producing and luteinic hormones.

Siliotti reported on the structure of the intraparenchymatous arteries and on some basal formations of the network in fibrosclerosis of the uterus.

Moschino made a contribution to the study of the segmentary innervation of the uterus by discussing the characteristic relation between the female genital apparatus and single segments of the cerebrospinal and of the vegetative system. He also discussed the parasympathetic innervation of the female genital apparatus.

PARIS

(From Our Regular Correspondent)

Aug. 10, 1949.

Twelfth Congress of French-Speaking Pediatrists

More than 600 pediatrists, representing eighteen nations, attended the Twelfth Congress of French-Speaking Pediatrists which was held in Paris, June 1-3, 1949, under the presidency of Professor Lesne, vice president of the National Academy of Medicine.

Nurslings' toxicosis was the most important subject on the agenda. After explaining the various theories, J. Levesque, R. Bastin and J. Lafourcade (Paris), in their study of the etiologic aspects, especially considered the toxic conditions connected with parenteral infections and otomastoiditis. Cathala (Paris) agrees with Levesque on the general conception of toxicosis, but differs with him with respect to certain nosologic identities. He thinks that intervention is justified if it is known, or believed, that otomastoiditis is the cause of a neurotoxic condition. J. Chaptal, D. Brunel and their co-workers (Montpellier) found in 58 cases of toxicosis that the frequent causes were otomastoiditis (30 cases) and infections of the digestive system. G. Lefebvre (Lille) stressed the part played by intestinal bacteria. R. Clement, J. Gerbeaux and their co-workers (Paris) were able to isolate salmonellas (B, C and D groups) twenty-two times, paracolibacilli six tjmes and colibacilli four times. These organisms were frequently found in metastatic localizations.

G. Mouriquand, N. Boulez and D. Dechavanne (Lyons), on the strength of 165 observations, said that human milk affords protection against the disease. Levesque and others have emphasized that weaning is an important factor. Procaine hydrochloride, intravenously administered, has sometimes produced unexpected results.

In a special study, Fanconi (Zurich) stressed the importance of urinalysis and blood studies for diagnosis and treatment. His treatment comprises the rapid hydration by continuous intravenous drip (two to four days) of a solution containing

equal parts of isotonic sodium chloride solution and glucosed serum, followed by a transfusion of blood plasma and anti-infectious and hepatoprotective treatment. The author said that he never had to resort to antrotomy and that the majority of nurslings may be saved. Frontali (Rome) observed the constant reduction of the alkaline reserve and the great frequency of hypopotassemia in 30 cases. G. M. Guest and S. Rappoport (Cincinnati) also noted the importance of study of the p_H and the concentration of cellular potassium, the modifications of which occur simultaneously with those of the red blood corpuscles. G. Lombroso (Genoa), in collaboration with Eliel and Nelson (Boston), was able to demonstrate experimentally, for the first time, the hypothesis to which, in the presence of an intracellular hypopotassemia, the extracellular sodium cation would set at work the maintenance of the osmotic pressure. Julien Marie (Paris) and his co-workers made the hepatosteatosis syndrome the subject of a special study and in 49 cases were able to note the prognostic value of the prothrombin rate. In 6 cases of hepatosteatosis, they noted exocrinian and endocrinian lesions of the pancreas and, above all, the rarefaction and even sometimes the disappearance of A cells and Langerhans' islands; they have connected those facts with hepatic steatosis; they associate pancreatic extract with the treatment of hepatic deficiency. Bernheim and J. Lanternier (Lyons) emphasized that hydration must be accompanied by an increase in the blood mass; in 81 cases, the mortality rate was lowered from 78 to 45 per cent by a massive perfusion of blood, associated with intravenous administration of procaine hydrochloride.

In a report of their anatomic and radiologic study, R. A. Marquezy and P. Renault (Paris) pointed out that the mechanism of bronchiectasis is still not understood. Delarue considers nervous incitations responsible, and Ameuille, Mezard and Lemoine have demonstrated the part played by thrombosis of the bronchial artery. J. Sloof (Eindhoven, Holland) emphasized the necessity of searching for bronchiectasis in all children with cough for over two months. He does not consider operation advisable before the age of 15 years. In his large experience at the Climatic Centre of Dieulefit, Preault has noted that the bronchorrheic syndrome does not always imply that there are real bronchial dilatations. Of 70 cases of lobar opacity, in 53 there were dilatations of the middle lobe and in 17 of the inferior lobe. R. Turpin, J. M. Lemoine and P. Chassagne (Paris) have twice observed a new dysmorphic syndrome of associated bronchiectasis, mega-esophagus and costal vertebral anomalies. This apparently frequent syndrome deserves a special place along with Kartagener's syndrome. The discovery is an argument in favor of bronchiectasis of congenital origin.

Intra-Arterial Blood Transfusion

Mallet-Guy's (Lyons) experimental work on 40 animals shows that in serious, agonal shocks arterial blood transfusion is superior to venous transfusion, which may provoke dilatation of the right side of the heart with compression of the left and complete collapse. At the same meeting of the Academy of Surgery, Welti (Paris) stressed that intra-arterial transfusion produces, at the same time, better vascularization of the coronaries. Santy's clinical experiments have shown in 4 cases, after the failure of intravenous transfusion, the excellent results of arterial transfusion performed with manometric control.

André Boivin Dies at 54

French biology and biochemistry have experienced a great loss in the death, at the age of 54, of André Boivin, member of the National Academy of Medicine and corresponding member of the Academy of Sciences. Having obtained a Rockefeller scholarship, he went to Strasburg, where he became the disciple of the eminent Professor Nicloux. He was one of the first in France to extract insulin from the pancreas. By his trichloracetic acid method, he succeeded in proving that certain antigens are not proteins but glucidolipid complexes, a discovery which permitted the preparation of much more active vaccines. In 1935 he returned from Bucharest to France, to work at the Paris Pasteur Institute. In 1946 he was appointed professor of biologic chemistry on the faculty of medicine of the University of Strasburg, where he began, together with Vendreley and Tulasne, a study of the chemical and cytologic structure of microbes and proved, by the effect of specific ferments, the existence of the bacterial nucleus. From this experimental data, he outlined a theory which, generally speaking, makes nucleic acid the substratum of acquired and hereditary characteristics. This theory has stimulated much research; it may lead to discoveries, as yet unexpected, in bacteriologic and genetic fields.

THE NETHERLANDS

(From Our Regular Correspondent)

AMSTERDAM, Aug. 2, 1949.

New Surgical Journal

In Holland, immediately after the war the surgeons did their utmost to overcome the lag caused by the occupation, when nearly all scientific work was hampered. Interest was greatest in anesthesia and surgery of the thorax. In Amsterdam, and soon also at Utrecht and Groningen, schools were founded for training in modern anesthesia. Among other things, in Amsterdam interesting research with the help of Professor Brinkman's reflectometer is in progress for the oxygen content of the blood during an operation; in this city a series of original and interesting observations by means of electrocardiographic examination during operations, principally in cases of congenital defects of the heart, were also made.

In the Laboratory for Experimental Surgery of the Amsterdam Surgical Clinic much work is being done on surgery of the thorax; tuberculosis of the lungs and various anomalies of the aorta are studied experimentally. A method was found for causing experimentally total stenosis of the isthmus of the aorta in a dog; experimental investigations of clinical problems regarding coarctation are now going on with these new methods.

A society has been founded in Holland that binds together the subdivisions of surgery. This society, formed by general surgeons, orthopedists, urologists, neurosurgeons and thoracic surgeons, among other events holds an annual congress where one subject is discussed and on which light is thrown by speakers from the subdivisions. The first congress, on surgical tuberculosis, was held in Amsterdam in 1948. Following an introductory lecture by a well known specialist in tuberculosis, a surgeon discussed surgical treatment of tuberculosis of the lungs with thoracoplasty; a second speaker amply defended extrapleural pneumothorax; extirpation of a lung was discussed; urologists discussed the surgical treatment of renal tuberculosis; two orthopedists defended, respectively, the operative and the conservative treatment of coxitis tuberculosa; and neurosurgeons gave accounts of their experience with the operative treatment of neurologic anomalies in spondylitis tuberculosa. The Dutch practitioners of the surgical sciences decided to record the results of their labor in a journal of their own, which is published in English, French and German, and therefore founded the *Archivum Chirurgicum Neerlandicum.*

Correspondence

EFFECTS OF SYMPATHETIC NERVOUS SYSTEM

To the Editor:—Dr. A. D. Jonas, in his discussion of the article "Some Effects of Myanesin on Psychiatric Patients" (J. A. M. A. **140**:1172 [Aug. 6] 1949), remarked: "For the last few years efforts have been made to prevent stimuli originating in the emotional centers of the central nervous system from reaching the effector organs" and, by inference, producing the anxiety state.

There are many reasons for believing that such stimuli arise in the sympathetic system itself and produce their effect on the central nervous system by regulating its blood supply. The fact that the sympathetic system is older developmentally is of interest.

Also, it is possible that "circulating epinephrine" is the mediator for the heart, sweat glands and the sympatheti nervous system of the brain. Thus the action of the agents would be to inhibit the formation of this mediator. If one further speculates that "circulating epinephrine" is a result of the activity of numerous materials liberated into the blood stream, among the most important of which are the products released by the chromaffin cells and the thyroid, one must conclude that an anticorticotropic and an antithyrotropic agent would represent physiologic antagonists.

The low metabolism of Cushing's syndrome and the underactive cortical function, which may well be just as important in toxic diffuse goiter as the hypertrophied thyroid (if iodine is not deficient), are examples of antagonism noted clinically. Thus a true adrenolytic or a true anticorticotropic agent would inhibit the chromaffin component and thereby relatively increase the thyroid component of "circulating epinephrine," with resultant increase in the anxiety state.

A true antithyrotropic agent by decreasing the thyroid component would in the same manner increase the chromaffin factor. Among other things, this would result in hypertension as is noted in functioning tumors of the chromaffin cells and as has been recorded following the intravenous use of *l*-norepinephrine (Goldenberg, M.; Pines, K. L.; Baldwin, E. DeF.; Greene, D. G., and Roh, C. E.: The Hemodynamic Response of Man to Nor-Epinephrine and Epinephrine and Its Relation to the Problem of Hypertension, *Am. J. Med.* **5**:792 [Dec.] 1948).

I submit that much of the knowledge concerning the function of the sympathetic nervous system is so vague that dogmatic opinions may tend to retard progress in this field.

I. M. Hay, M.D., Melbourne, Fla.

PSYCHODYNAMICS AND THE ALLERGIC PATIENT

To the Editor:—I would like to comment on the review of my book, "Psychodynamics And The Allergic Patient," in The Journal, July 2, 1949. While I realize that the reviewer has every right to state what he believes, I do not believe that he has the right to misrepresent what I explicitly stated in my book. With respect to perhaps the most important example of misrepresentation, the reviewer writes, "In the main, the author follows the usual line of proponents of the idea who claim that emotional and psychic elements can be the major and only factor in producing manifestations which resemble those produced by allergy." This is a misstatement both from the point of view which I presented in my book and what is actually stated. I quote what is actually written on page 25. "In practically all of the cases with bilateral, wheezing respiratory difficulties (excluding tumors, stenoses, et cetera) which I have seen, there was some plausible type of immunologic allergic or infectious basis. However, in the dermatoses, not infrequently there occur clinical entities similar to allergic responses where a true immunologic reaction cannot be unequivocally demonstrated."

Harold A. Abramson, M.D., New York.

DOES EXCHANGE TRANSFUSION PREVENT NEUROLOGIC SEQUELAE OF ERYTHROBLASTOSIS FETALIS?

To the Editor:—In our very first papers on the treatment of erythroblastosis by exchange transfusion, it was pointed out that the purpose of the procedure is to remove red cells coated with univalent Rh antibodies and to replace them by inagglutinable type Rh red blood cells. The validity of this rationale was established by the significant reduction in the immediate mortality rate for the disease following treatment by exchange transfusion. In addition, it was soon observed that the babies who survived developed normally both physically and mentally.

In erythroblastotic babies who survive, the most dreaded complication is mental retardation and other evidences of brain damage resulting from the disease. The incidence of neurologic sequelae following erythroblastosis has been reported in the literature as ranging from 10 to 30 per cent. Among our own patients treated by exchange transfusion, 23 have now survived more than eighteen months and up to three years. Of these, all but 1 could be located and were recently reexamined. All 22 children examined proved to be entirely normal. In contrast to this, among 25 other infants who had recovered after simple transfusion therapy, 4 exhibited mental retardation with athetosis and other manifestations characteristic of nuclear damage. These data are summarized in the accompanying table, together with data for 25 control patients of Zuelzer which survived after expectant treatment.

Neurologic Sequelae Among Erythroblastotic Infants Treated by Exchange Transfusion as Compared with Those Receiving Simple Transfusion Therapy

Method of Treatment	Total Number of Cases	Number with Neurologic Sequelae
Exchange transfusion (present report).....	22	0
Simple transfusion therapy (present report)	25	4
Simple transfusion therapy *.....	25	8

* Zuelzer, W. W., in The Rh Factor: Practical Aspects, Round Table Discussion, J. Pediat. **1**:799 (June) 1948.

A striking fact, also pointed out by Zuelzer, is that the occurrence of neurologic sequelae is not correlated with the severity of the manifestations during the neonatal period. Thus, 3 of our own patients with neurologic sequelae had originally been considered to be only mildly affected, and 2 had been discharged after having received single transfusions. It seems apparent, therefore, that all patients with serologically proved erythroblastosis due to Rh sensitization, no matter how mild the manifestations appear to be, should be treated without delay by exchange transfusion, not only to save life but also to prevent neurologic sequelae. The treatment must be instituted immediately after birth, and this can be accomplished with the aid of routine antenatal Rh tests and Rh antibody titrations of the serums of expectant Rh-negative mothers.

Until now the accepted practice has been to treat expectantly patients with erythroblastosis caused by A-B sensitization,

because in such cases the disease tends to be mild and recovery is often spontaneous (icterus precox). However, nuclear jaundice has occasionally caused death in such cases, and unpublished observations suggest that neurologic sequelae are disturbingly frequent among affected babies who survive. It may be that such patients should also be treated by exchange transfusion more often than is now the practice.

A. S. WIENER, M.D., Brooklyn.
I. B. WEXLER, M.D., Brooklyn.
N. F. GIBBEL, B.A., Brooklyn.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY, INC. *Oral.* Denver, Oct. 16-20. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 27.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY, INC.: *Oral.* Cincinnati, Oct. 21-23. Sec., Dr. George M. Lewis, 66 East 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 17. Asst. Sec.-Treas. Dr. W. A. Werrell, 1 Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 3. Final date for filing applications is Jan. 1. Sec., Dr. W. J. German, 789 Howard Ave., New Haven.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC. *Part I.* Various Centers. Feb. 3. Final date for filing application is Nov. 5. Sec., Dr. Paul Titus, 1015 Highland Bldg. Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: St. Louis, Oct. 15-19; Boston, April. Sec., Dr. Edwin B. Dunphy, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY. *Part II.* New York City, Feb. 9-10. Address: Sec.-Treas., Dr. Harold A. Sofield, Room 1856, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 4-7. Sec., Dr. D. M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 7-8. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

AMERICAN BOARD OF PEDIATRICS: New York City, Oct. 21-23; Chicago, Dec. 9-11. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec.-Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF PREVENTIVE MEDICINE AND PUBLIC HEALTH: *Parts I and II.* New York, Oct. 22-24. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

AMERICAN BOARD OF PROCTOLOGY: November. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC. *Special Examination.* Chicago, Oct. 24-25. December, New York City. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Cincinnati, Sept. 28-Oct. 2. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, October 26. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Written.* December. *Oral and Clinical.* Chicago, Feb. 11-15. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

ARKANSAS: * *Examination.* Little Rock, Nov. 3-4. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

COLORADO: * *Endorsement.* Denver, Oct. 4. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

CONNECTICUT: * *Examination.* Hartford, Nov. 8-9. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven.

DELAWARE: *Examination.* Dover, Jan. 10-12. *Reciprocity.* Dover, Jan. 19. Sec., Dr. J. S. McDaniel, 229 State Street, Dover.

DISTRICT OF COLUMBIA: * *Examination.* Washington, Nov. 14-15. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

FLORIDA: * *Examination.* Jacksonville, Nov. 27-29. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

GEORGIA: *Examination.* Atlanta, Oct. 11-12. *Reciprocity.* Atlanta, Oct. 13. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

GUAM: *Endorsement.* Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

IDAHO: Boise, Jan. 9. Exec. Sec., Mr. Armand L. Bird, 305 Sun Building, Boise.

ILLINOIS: Chicago, Oct. 4-6. Supt. of Registration, Mr. Fred W. Rueff, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

IOWA: * *Examination.* Des Moines, Dec. 5-7. *Reciprocity.* Des Moines, Oct. 3, Nov. 7, Dec. 5. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 8-9. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

MAINE: Portland, Nov. 8-9. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

MARYLAND: *Examination.* Baltimore, Dec. 13-16. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 1. *Homeopathic. Examination.* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 West 40th St., Baltimore.

MINNESOTA: * Oct. 18-19. Sec., Dr. Julian F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Reciprocity.* Jackson, December. Sec., Dr. Felix J. Underwood, State Board of Health, Jackson 113.

MISSOURI: *Examination.* Jefferson City, October 24-26. *Reciprocity.* Jefferson City, October, 23. Exec. Sec., Mr. John A. Hailey, State Capitol Building, Jefferson City.

MONTANA: Helena, Oct. 3-5. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: Carson City, Nov. 7. Sec., Dr. George H. Ross, 112 N. Curry St., Carson City

NEW JERSEY: Oct. 18-21. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe. Oct. 10-11. Sec., Dr. Charles J. McGoey, Coronado Bldg., Santa Fe.

NEW YORK: *Examination.* New York, Albany, Syracuse and Buffalo, Oct. 4-7. Sec., Dr. Jacob L. Lochner Jr., 23 S. Pearl St., Albany 7.

NORTH CAROLINA: *Endorsement.* Asheville, Oct. 17. Sec., Dr. Ivan Proctor, 226 Hillsboro Street, Raleigh.

OHIO: *Examination.* Columbus, December. *Endorsement.* Oct. 2. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: *Endorsement.* Portland, Nov. 4-9. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Building, Portland.

OKLAHOMA: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

PENNSYLVANIA: *Examination.* Philadelphia or Harrisburg, January. Acting Sec., Mrs. Marguerite G. Steiner, 351 Education Buliding, Harrisburg.

RHODE ISLAND: * *Examination.* Providence, Oct. 6-7. Chief, Mr. Thomas B. Casey, 366 State Office Building, Providence.

SOUTH CAROLINA: *Examination.* Columbia, Nov. 8-9. *Reciprocity.* First Monday of every month. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Sioux Falls, Jan. 17. Sec., Dr. C. E. Sherwood, 300 First National Bank Building, Sioux Falls.

TENNESSEE: * *Examination.* Memphis, Sept. 28-29. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis 3.

VIRGINIA: *Examination.* Richmond, Dec. 2-3. *Reciprocity.* Richmond, Dec. 1. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

WASHINGTON: * Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

WEST VIRGINIA: *Examination.* Charleston, Oct. 3-5. *Reciprocity.* Charleston, Oct. 3. Director, State Health Department, Dr. N. H. Dyer, Room 639, Capitol Building, Charleston.

WISCONSIN: * *Examination.* Madison, Jan. 10-12. Sec., Dr. C. A. Dawson, River Falls.

WYOMING: Cheyenne, Oct. 3. Sec., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination.* Tucson, Sept. 20. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, Oct. 4. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

CONNECTICUT: New Haven, Oct. 8. Executive Assistant, State Board of Healing Arts, Miss Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: Washington, Oct. 24-25. Sec., Dr. G. C. Ruhland, 4130 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, Nov. 5. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

MICHIGAN: *Examination.* Detroit and Ann Arbor, Oct. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing 15.

MINNESOTA: *Examination.* Minneapolis, Oct. 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, Oct. 4-5. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009, State Capitol Bldg., Lincoln 9.

OKLAHOMA: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

OREGON: Portland, Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

SOUTH DAKOTA: Vermillion, Dec. 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

WASHINGTON: Seattle, January. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

WISCONSIN: Milwaukee, Sept. 24 and Dec 3. Sec., Prof. W. H. Barber, Ripon College, Ripon.

Bureau of Medical Economic Research

MEDICAL ECONOMIC REVIEWS AND ABSTRACTS

Prepared by the Staff of the Bureau of Medical Economic Research

Benefits of Group Practice: The Kingsley Roberts Memorial Lectures: 1948. Group Practice and Medical Education. By Alan Gregg, M.D. The Role of Medical Group Practice in the Changing Order. By George Baehr, M.D. Economic Aspects of Medical Group Practice. By C. Rufus Rorem, Ph.D., C.P.A. Paper. Pp. 40, with 1 portrait. Medical Administration Service, Inc., 1790 Broadway, New York 19, 1949.

This publication is a collection of three addresses on group practice by Alan Gregg, M.D.; George Baehr, M.D., and C. Rufus Rorem, Ph.D. The basic premise of the series is that a physician who does not practice in formal association with other physicians—including a full range of specialists—will be isolated from medical contacts and inaccurate in his diagnoses. An apparent corollary to this premise in the last two articles is that a physician must be a board member in order to practice good medicine. In reading these addresses, one is curious to learn just what position in the medical picture the authors would assign the general practitioner.

Although one must agree that group practice offers favorable features, it is difficult to believe there is any single solution to a problem with so many variables.

Dr. Gregg points out, amid some digression on social work, that during his clinical studies the student becomes aware of his "personal limitations" and "the handicaps of a practitioner working single-handed." He explains the advantages of groups such as those of the full time clinical department. By analogy, then, if clinical methods are preferable for teaching purposes, they are preferable for the practice of medicine.

The author concedes the importance of personal relationships in medical care and the need for group practice to "develop increased attention" to this aspect "if it is to stand the test of patients' satisfaction" (p. 12). He attributes this fault of group practice to the failure of teaching hospitals to emphasize the personal relationship between the physician and patient.

Dr. Baehr expresses his conviction that the development of prepayment plans for medical care will lessen the number seeking attention at free wards and outpatient clinics on which medical schools depend for their clinical teaching material. A natural consequence will be the development of clinics, in conjunction with medical schools, to take full pay as well as indigent patients. This movement is being "accelerated at the moment by the financial difficulties in which the medical schools now find themselves." Significant questions regarding the corporate practice of medicine are inherent here, but they are not discussed. He also considers the question of voluntary medical insurance plans which, in contrast to the Health Insurance Plan of New York, do not offer "complete coverage." "They leave ninety-five per cent of the medical care for families without coverage and provide only limited indemnities for illnesses in the home" (p. 19). This "defect" arises, according to the author, from the insistence of the physicians on a fee-for-service basis of payment. Furthermore, medical opinion that "fee choice" of physicians must be extended to include every physician in the state licensed to practice medicine has furnished a deterrent to the establishment of group-sponsored voluntary medical insurance plans. Dr. Baehr's point of view is in keeping with his position as an advisor and member of the board of the Health Insurance Plan of New York which offers a restricted choice of physician to the patient and a capitation basis of payment to the physician. It further illustrates his lack of understanding of the fundamentals of insurance.

A large segment of Dr. Baehr's address is devoted to describing the Health Insurance Plan and to comparing it favorably with the local Blue Shield plan. The following statement typifies the general tone of the address:

"The resistance to group practice stems chiefly from the older physicians and specialists, motivated by the conviction that they have arrived at economic and professional security and must protect their 'vested interests' from competition with another form of medical care" (p. 26).

In the third address, "Economic Aspects of Group Practice," by C. Rufus Rorem, is a discussion of the characteristics of group practice, the reasons for its failure, extent of location, equipment and organization, and a more reasonable interpretation than Baehr gives of why clinical groups have not grown more rapidly. Rorem apparently knows that 97 per cent of the physicians in active practice during the past two decades have not chosen to join groups and that many of those in individual practice have informal arrangements for referrals. His statement, "It is easier for him [the physician] to be master of his own house than to adapt his work to a group of professional equals" is in contrast to Gregg's hypothesis that physicians prefer to work in clinical groups because they are taught under that arrangement.

"A final very important reason why physicians are not forming a large number of private groups is that: they do not have to. Many of the professional and economic advantages sought in group practice have become available through the hospitals in each community" (p. 33).

Rorem then discusses with favor the development of additional medical services being offered by the hospital. He also involves himself in the question of salaried physicians.

"An adequate salary should encourage a conscientious physician to do more thorough work than otherwise. The fee-for-service basis of charge is the professional equivalent of the piece-work system in industry which serves as a speed-up device for manual workers" (p. 38).

Rorem concludes that group practice is but one phase of a complete health program for a nation.

Medical Motion Pictures

FILM REVIEWS

Pay Attention. Problems of Hard of Hearing Children. 16 mm., black and white, sound, 1,100 feet (1 reel), showing time thirty minutes. Produced in 1949 by the Department of Child Study, Vassar College, as the sixth in a series of films in Studies of Normal Personality Development, aided by a grant from the Estate of Lester N. Hofheimer. Procurable on rental or purchase from the New York University Film Library, 26 Washington Place, New York 3.

This film deals with the problems of the parents and teachers of children of all ages whose hearing is impaired. It depicts the methods by which the hard of hearing may be helped to learn lip reading, to use a hearing aid and to take their place with other children in school and at play. The opening sequences show a teacher introducing a child and his playmates to a hearing aid. The scene shows how necessary such an introduction is and by what methods it can be accomplished. A small class in lip reading is seen in session; the maneuvering whereby a resistant child is introduced to permit making of an ear mold and the tantrum of an insecure child resisting exposure to a new experience are shown with unusual naturalness. Other sequences show how painful experiences of a deafened child at home and in school will lead to reticence, day dreaming and malingering, how audiometric tests and physical examinations can aid in the recommendation of such handicaps and how older school children can profit by instruction in the psychologic aspects of lip reading, to hear others better and to make themselves better understood. This section is valuable to parents and teachers because it shows what older persons can do to make themselves more easily understood by children, whether normal or handicapped. These suggestions include proper use of lighting, special arrangements, such as the "roving seat" for the handicapped school child, and better speech habits for parents and teachers.

The film shows the advantages of supplying a hearing aid early in life, especially during the months when a baby normally learns to speak, and of having hard of hearing children grow up among normal children who have learned to accept the fact that they are handicapped.

It is difficult to imagine an audience, young or old, lay or professional, that would not profit from seeing this commendable film. It should be of special interest to parents of both deaf and normal children, teachers and school administrators.

Photographically the film is poor in places. The direct recording of group scenes is rather difficult to understand.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Validity of Examining Board's Rules Relating to Foreign Graduates.—Robert E. Nathan made application to the state board of medical examiners for permission to take the regular examination prescribed by law for license to practice medicine. The application was denied, and he appealed to the statutory appeal board, which held that he was entitled to take such examination. Accordingly, the board of medical examiners appealed to the Supreme Court of Oklahoma.

The applicant graduated from the Royal University of Florence, Italy, Faculty of Medicine, in October 1936 and immigrated to the United States, arriving May 7, 1937. On May 15 he made application for citizenship, which was granted in due course of time. During the same year, after an examination by the Board of Medical Examiners of the State of New York, he was admitted to practice medicine and surgery in that state. After serving one year as intern in St. Johns Hospital in Tulsa, Okla., he volunteered his services to the United States Government in World War II and was commissioned an officer in the Medical Corps of the United States Army, serving three years therein, a part of which was spent overseas. Thereafter he was employed by the Veteran's Administration for approximately one year in its hospital at Muskogee, Okla. While so engaged he made his application to the Oklahoma board of medical examiners. Action on the application having been delayed, he applied to the state board of medical examiners of Texas for permission to take the examination in that state. Permission was granted; he successfully passed the examination and was licensed to practice in Texas.

The medical practice act of Oklahoma provides, among other things (59 O.S. 1941, sec. 491), ". . . it is further provided that the applicant must submit satisfactory evidence that he is a graduate of a legally chartered medical college or university, the requirements of which for graduation shall have been, at the time of such graduation, in no particular less than those prescribed by the Association of American Medical Colleges for that particular year. . . ." Accompanying the applicant's application to the Oklahoma board of medical examiners, and in evidence before the appeal board, was an affidavit setting forth in detail what were averred to be the subjects required by the Association of American Medical Colleges during 1936 to be taught in a curriculum extending for a period of four years. It was further averred that the requirements for graduation of the Royal University of Florence, Faculty of Medicine, included all of said subjects and that before graduation the applicant had attended said university for a period of at least four years, actually received instruction in each and all of said subjects and completed the courses of instruction therein. The affidavit therefore declared that the requirements for the applicant's graduation were in no particular less than those prescribed by the Association of American Medical Colleges for the same year.

Under its rule-making powers, and to supplement the aforementioned provision of the Oklahoma medical practice act, the medical board in 1923 and 1937, respectively, adopted the following rules: "(1) All applicants for licensure to practice medicine and surgery in the State of Oklahoma, graduating since 1917, must have graduated from a Class "A" school, as classified by the Association of American Medical Colleges for that particular year." "(7) Due to the inability to obtain proper information as to the standing of medical schools in foreign countries, graduates of foreign schools, with the exception of approved schools of Canada, shall not be eligible for licensure in the State of Oklahoma, until further ruling of this Board." The grading required by rule 1 was done by the American Medical Association Council on Medical Education and Hospitals. Under date of Nov. 7, 1945, the secretary of the Oklahoma board received a letter from the Council on Medical Education and Hospitals which read in part:

"It has always been the policy of the Council on Medical Education and Hospitals of the American Medical Association to limit the schools which it considers for inclusion on its approved list to institutions which it can visit and inspect. Even before the war it was not possible to carry out inspections in medical schools outside the United States and Canada. Consequently, the Council maintains no list of approved schools in foreign countries. It neither approves nor disapproves such institutions.

"It is incumbent on medical schools in this country, licensing boards, or other agencies, to make their own evaluation of the credentials submitted from a medical school of a foreign country. This Council has no objection to the acceptance of credentials from such foreign institutions." The position of the medical board, said the Supreme Court, was reflected by the following excerpt from the testimony of Dr. Weber: " . . . in talking over Dr. Nathan's case at the meetings of the Board I have attended, there was no one who felt it was a reflection on Dr. Nathan's ability or his integrity but that we had a rule here we have been maintaining for a number of years. We think it is a good rule that we will not accept those that are not graduates of class 'A' schools. . . . I think the rule is safe—that we will not accept any foreign school unless it has been certified by the Association of American Medical Colleges."

The medical board contended that, unless its action in refusing applicants for examination was arbitrary and capricious, the appeal board exceeded its jurisdiction. It also contended that the unsupported affidavit of the applicant was not sufficient to satisfy the requirements of the law.

The only question of discretion on the part of the medical board, said the Supreme Court, pertains to that with which it is endowed in promulgating its rules, the effect of which, as law, must rest on the fact that they are in aid of and not in derogation of the legislative purpose. The only authorized basis for any rule is that it is a means to the accomplishment of the legislative purpose expressed in the statute, and its quality is to be judged by the effect thereof when used. If not conducive to such purpose, it is not authorized by the statute and is therefore without the force of law.

Assuming, the court continued, but not deciding, that the rule referred to is valid as fixing a standard to be applied to applicants graduating from schools within the area where the system of grading is applied, it does not follow that the rule should apply to applicants holding diplomas from schools outside of such area and to which the prescribed grading can have no pertinent bearing. Under the statute Nathan was entitled to apply for the examination. As a condition to the exercise of the statutory privilege, it was incumbent on him to furnish satisfactory evidence that the school from which he graduated measured up to the statutory requirements, and there devolved on the medical board the duty to weigh such evidence and determine whether this was sufficient. Since his graduating school was not within the area where the grading system obtained, the only intelligent method of determining the quality of the graduating school was to weigh the evidence submitted. Such conclusion as to the duty of the medical board in the situation, said the court, is expressly recognized in the letter of the Council on Medical Education and Hospitals of Nov. 7, 1945. If, on weighing the evidence submitted, the medical board found this insufficient, the application could be properly denied, in which case the terms of the statute would have been recognized as operative and the applicant, having been accorded his full right, would have no cause for complaint. But to hold that the applicant in this case is to be debarred from applying because he does not have a diploma from a grade "A" school is not only not conducive to accomplishing the purpose of the statute but is subversive thereof by withholding from the applicant a right afforded by the statute. We hold, the Supreme Court concluded, that rule 7, relied on the medical board as authority for its action, is inoperative because it is unauthorized, that the applicant was entitled to make application for the examination and that the appeal board did not exceed its jurisdiction. Accordingly the decision of the appeal board granting the applicant the right to take the examination was affirmed. *Application of State Board of Medical Examiners. In re Nathan, 206 P. (2d) 211 (Oklahoma, 1949).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

77:285-424 (March) 1949

Thrombosis of Dural Sinuses. J. A. Toomey and H. B. Hutt.—p. 285.
*Treatment of Acute Intussusception by Enema of Roentgenologic Contrast Medium. G. Lindberg and O. Morales.—p. 303.
Electroencephalography of Newborn: II. Studies on Normal, Full Term Infants While Awake and While Drowsy. J. C. Hughes, B. Ehemann and F. S. Hill.—p. 310.
*Lacuna Skull and Craniofenestria. C. van Waalwijk van Doorn and J. N. Boet.—p. 315.
Nephrosis in Children: I. Observations on 84 Patients. II. Clearance and Saturation Tests. E. Galán.—p. 328.
Severe Erythroblastosis Fetalis and Icterus Precox: Occurrence of Both Diseases in the Same Family. G. J. Brancato.—p. 351.
Prevalence and Distribution of Ossification Centers in Newborn Infant. A. Christie.—p. 355.
BCG Vaccination Among Medical and Nursing Students. E. E. Irons. —p. 376.
Methods of BCG Production and Vaccination. S. R. Rosenthal.—p. 377.
BCG Vaccination in Chicago. R. A. Black.—p. 381.
Complications of Ascariasis Requiring Surgical Treatment: Report of Case with Abdominothoracic Complications. A. Ochsner, E. G. DeBakey and J. L. Dixon.—p. 389.

Enema of Contrast Medium for Acute Intussusception.—Lindberg and Morales present observations in 18 cases of intussusception in children under 3 years of age. The symptoms of intussusception appear suddenly. A violent pain in the abdomen causes the child to scream. The child usually draws its legs up toward the abdomen. Vomiting usually occurs. The child becomes pale, its expression suffering, its eyes vacant and fearful and its muscles relaxed. Palpation revealed an intussusception tumor in 15 of the 18 cases. The roentgen examination by means of a contrast enema is decisive for the diagnosis and is also effective in reducing the intussusception. It is important that the contrast medium be of correct temperature, consistency and pressure. The authors used a medium made with pharmabaryt® (98 per cent barium sulfate and 2 per cent indifferent colloids). To 1 Kg. (2.2 pounds) 1.25 liter (2.64 pints) of water at 37 C. (98.6 F.) is added. The enema is poured from about 1.5 meters (about 5 feet) above the level of the patient. The examiner controls the flow of the contrast medium by means of a clip on the rubber tube. The medium is allowed to flow until the obstruction is reached; a roentgenogram of the intussusception is then taken. Slowly the colon is filled and the intussusception pushed in an oral direction. The colon is usually irritated and contracts as in cramp, thereby pushing back the contrast medium and practically emptying the intestine. It is important to cut off the flow of the enema until the contraction has ceased. The reduction of the intussusception by means of an enema of roentgenologic contrast medium was successful in all the 18 cases. These favorable results are largely due to the fact that treatment was given early. The time elapsed was never more than twelve hours, and in all but 4 it was less than six hours.

Lacuna Skull and Craniofenestria.—According to van Waalwijk van Doorn and Boet lacuna skull and craniofenestria are congenital bony defects in the skull. In lacuna skull these defects are restricted to the diploe and the inner table. No abnormality may be seen in the skull during life. Palpation reveals at the site of the defects a "springy" feeling, such as that in craniobates (ping-pong-ball phenomenon). Craniofenestria is a true bony defect. The cranial contents may protrude through these defects. In addition to the defective diploe and inner table, the outer table is also absent; the dura is in contact with the periosteum. Lacuna skull and craniofenestria may be difficult to distinguish from each other, and intermediate forms occur. They are often seen with spina bifida. The prognosis depends largely on whether or not the defects are associated with a meningocele. If they are, death due to progressive hydrocephalus or meningitis is usual. In a few children with lacuna skull without other abnormalities the lacunas tend to disappear slowly, but remnants will probably always be seen on the roentgenogram. After reviewing some of the theories advanced to explain the pathogenesis of these defects, the authors present the histories of 5 patients admitted to Amsterdam pediatric clinics during 1946. The fact that craniofenestria is constantly associated with spina bifida indicates a developmental disorder. The authors suggest that in their cases the deficient diet of the mother may have been a causative factor.

American J. Obstetrics and Gynecology, St. Louis

57:625-830 (April) 1949. **Partial Index**

*Reactions to X-Ray and Radium Therapy in Treatment of Cancer of Uterine Cervix. D. G. Morton and J. A. Kerner.—p. 625.
Vascular Congestion and Hyperemia: Their Effect on Function and Structure in Female Reproductive Organs. H. C. Taylor Jr.—p. 637.
Vaginal Delivery Following Cesarean Section. H. E. Schmitz and G. R. Baba.—p. 669.
Effects of Various Estrogenic Preparations: II. Changes in Vaginal Mucosa and General Status of Climacteric Women Following Injection of Aqueous Suspensions of Estrone and Estradiol. M. Vogel, T. H. McGavack and J. Mellow.—p. 682.
Vaginal Removal of Uterus by Morcellation. E. Allen.—p. 692.
Relationship of Adolescent Menstruation to Body Temperature and Sterility. N. R. Cooperman.—p. 701.
Capillary Fragility and Use of Rutin in Toxemias of Pregnancy. W. J. Dieckmann, Z. Akbasli and G. T. Aragon.—p. 711.
Combined Extrauterine and Intrauterine Pregnancy. J. P. Michaels. —p. 717.
Report on 159 Third Degree Lacerations. H. A. Ingraham, M. M. Gardner and E. G. Heus.—p. 730.
*Appendicitis Occurring During Pregnancy: Diagnostic Review of 200 Cases. E. G. M. Krieg.—p. 736.
Carcinoma of Vulva: Review of 50 Cases. A. B. Lunin.—p. 742.
Evaluation of Guterman Pregnancy Test. S. D. Soule and M. Yanow. —p. 748.
Detection of Early Carcinoma of Cervix: Coning Biopsy. S. B. Gusberg.—p. 752.
Occurrence of Spina Bifida and Hydrocephalus in Siblings: Review of Literature and Case Report. J. C. F. Chapman.—p. 761.
Transverse Presentation of Fetus: Analysis of 186 Consecutive Cases. C. M. Johnson.—p. 765.
Invasive Hydatidiform Mole. J. P. Hennessy.—p. 779.
Massive Aortic Dissection (Dissecting Aneurysm) Associated with Pregnancy and Hypertension. E. G. Anderson.—p. 793.
Adenocarcinoma of Ovary Diagnosed by Vaginal Smear. H. C. Frech. —p. 802.
Congenital Defects in Infant Following Mumps During Pregnancy. M. W. Greenberg and J. S. Beilly.—p. 805.

Reactions to Radiation Therapy in Cancer of the Cervix.—Morton and Kerner discuss reactions incurred during radium and roentgen treatment of the pelvis in cervical cancer. Radium application is usually confined to the uterine canal and upper part of the vagina. The sphere of its activity is comparatively limited; yet in addition to the uterus and cervix proper and the upper part of the vagina the bladder and rectum may be affected as may even the small bowel if it happens to be adherent to the uterus. Roentgen therapy for cervical cancer is usually delivered through relatively large skin fields. These technics necessitate the passage of the roentgen rays through large epithelial surfaces, large volumes of muscle and supporting connective tissues and fasciae, some portions of both small and large bowel and bone. A certain amount of this is inevitable if the roentgen rays are to reach the parametria and the regional pelvic lymph nodes. With the combination of the two sources of irradiation, there are many possibilities for harm. There have been enough distressing and fatal complications to warrant analysis. The authors describe the radiation technic in use at the University of California Hospital and review the immediate and late reactions that occurred among 621 patients. The incidence of complications was definitely greater in cases in which both radium and roentgen rays were used and they also increased as the dose was increased. Overradiation was often present. They believe that a reduction in dose is in order. Factors such as screening intensity, duration of treatment and interval between treatments may play a part in this connection. Efforts should also be continued to determine the radiosensitivity of tumors, since reduced amounts might frequently be in order. Other measures which deserve further

investigation are the antibiotics (disappointing so far), palliative surgery in cases of radionecrosis without recurrence, continuous hospitalization during roentgen therapy and determination of isodose curves for the method of treatment in use.

Appendicitis During Pregnancy.—Krieg reports on material obtained through the courtesy of four hospitals in Detroit. He divides the 200 patients into the following four groups: 52 with acute appendicitis, 125 with nonacute appendicitis, 2 subjected to operation during the interval and 21 discharged without operation. An analysis of the cases of acute appendicitis showed that the most important aspect of diagnosis was an accurate history. Physical examination of the patients in the "acute" series revealed a lack of findings. Only 9 presented rectus or abdominal wall spasm. The records of 18 revealed that no muscular rigidity was present. Tenderness over McBurney's point was present in only 27 cases. It was apparent that the usual physical signs were poorly demonstrable or absent in about half of the cases. Abdominal examination of the cases of nonacute appendicitis revealed no instance of finger tip localization of pain. Slight pain on deep palpation over McBurney's point or the right lower quadrant of the abdomen was mentioned in 49 cases; the absence of pain was recorded twenty-six times. This indicates that physical examination was misleading. The simple blood pictures were poor diagnostic aids. Many of the patients with acute appendicitis had cell counts within the upper limits of normal, while many with nonacute appendicitis had blood cell counts usually associated with advanced suppurative appendicitis or peritonitis. The deaths were found in the cases of well advanced appendicitis and peritonitis. The most important factor to be considered in the differential diagnosis was the pain associated with the enlarging uterus in the early stage of pregnancy and the "lightening" pains of the mother at term. If there is a definite anamnesis of appendicitis accompanied by poor physical signs, or none, and an inconclusive blood picture, immediate operation is indicated.

American Journal of Pathology, Ann Arbor, Mich.

25:187-356 (March) 1949

Pathogenesis of Experimental Hemoglobinuric Nephrosis in Rabbits, with Special Reference to Late Manifestations. J. J. Lalich.—p. 187.
Hemoglobinuria (Blackwater Fever) in Monkeys: Consideration of Disease in Man. R. H. Rigdon.—p. 195.
Enlargement of Bronchial Arteries, and Their Anastomoses with Pulmonary Arteries in Bronchiectasis. A. A. Liebow, M. R. Hales and G. E. Lindskog.—p. 211.
Histopathologic Observations in Cases of Hodgkin's Disease Treated with Nitrogen Mustard. V. H. Cornell and A. S. Blauw.—p. 233.
Cells of Megakaryocyte Series in Pernicious Anemia: in Particular, Effect of Specific Therapy. R. D. Epstein.—p. 239.
Effect of Normal Saline Solution, Ringer's Lactate Solution, and Distilled Water on Lungs of Dogs and Rabbits. H. C. Miller, T. R. Hamilton, G. W. Wise and H. A. Wenner.—p. 253.
Myocarditis in Vitamin E-Deficient Rabbits. J. H. Bragdon and H. D. Levine.—p. 265.
Factors Influencing Collagen Content in Experimental Cirrhosis. T. G. Morrione.—p. 273.
Cutaneous Leiomyoma of Goldfish: I. Morphology and Growth in Tissue Culture. H. G. Schlumberger.—p. 287.
Effects of Deprivation of Water on Adrenal Glands of Rats. J. Nichols.—p. 301.
Plasma Cell Hyperplasia and Hyperglobulinemia in Trichinosis: Duration of Larviposition. J. R. Carter.—p. 309.
Diverticula in Terminal Portion of Common Bile Duct. J. A. Sterling.—p. 325.
Neoplastic Diseases of Dogs: I. Neoplasms of Melanin-Forming Cells. R. M. Mulligan.—p. 339.

American Journal of Public Health, New York

39:577-712 (May) 1949. **Partial Index**

Recent Observation on British National Health Service. H. R. Leavell.—p. 577.
Can Child Accidents be Prevented in Your Community? D. B. Armstrong and W. G. Cole.—p. 585.
Chronic Disease Study of California Department of Public Health. W. L. Halverson, L. Breslow and M. H. Merrill.—p. 593.
Chronic Disease as Industrial Hygiene Problem. C. Selby.—p. 598.
Use of Statistics in Cancer Control Programs. H. F. Dorn.—p. 602.
Diabetes Control in Local Health Department. H. L. C. Wilkerson and M. J. Ford.—p. 607.
Health Officer Survey of Medical Care Program. W. H. F. Warthen.—p. 614.
Training Physicians in Public Health Nutrition. F. J. Stare.—p. 624.
Public Health Engineering in Foreign Areas with American Industry. J. M. Henderson.—p. 629.

American Journal of Surgery, New York

77:409-542 (April) 1949

Sump Drainage in Suprapubic Prostatectomy. L. E. McCrea.—p. 411.
Ectopic Pregnancy: II. With Special Reference to Abdominal Pregnancy. J. Jarcho.—p. 423.
*Arterial Varices: Syndrome. G. H. Pratt.—p. 456.
Significance of Dietary Supplementation in Surgical Cases. J. L. DeCourcy.—p. 461.
Infections of Head and Neck. W. A. Coakley, D. Teplitsky and A. Diaz.—p. 469.
Sacrococcygeal Pilonidal Cyst. J. Berkowitz.—p. 477.
*DeQuervain's Disease. C. R. Hanlon.—p. 491.
Penetrating Wounds of the Abdomen. R. L. Byron Jr.—p. 499.
Use of Concentrated Plasma in Late Toxemias of Pregnancy. A. Golden.—p. 503.
Skin Traction in Guillotine Amputations. G. V. Rosenberg.—p. 505.
Umbilical Hernia: Simple Method of Repair. J. P. Campbell.—p. 506.
Modification in Technic of Establishing Temporary Transverse Colostomy. H. S. Rafal.—p. 507.

Arterial Varices: A Syndrome.—Pratt believes that some patients with arteriovenous anastomosis are treated erroneously for varicose veins. These patients have arteriovenous connections of a congenital type. The arterial and venous systems communicate during fetal life, but the junctions normally close prior to birth. In some this closure does not occur, which leads to congenital arteriovenous aneurysms or hemangiomas. In others the closure is inadequate, only a single layer of cells separating the arterial and venous systems. With increased intravascular pressure due to growth, unusual strain or trauma, immature connections "blow out" and arterial blood is pumped into the larger veins. The femoral artery or one of its branches is the usual arterial source and the saphenous system is the venous end of this connection. In others multiple anastomoses between the popliteal artery and the lesser saphenous system are found. In either case there are usually many secondary arteriovenous connections on the lateral side of the thigh or calf. The diagnosis can be made by watching for the following points: The veins dilate rapidly; they remain partially filled on elevation of the limbs; the blood in these vessels can be reduced on pressure but the veins fill more rapidly than ordinary varicose veins. Pulsation is synchronous with cardiac systole. If a needle is introduced into these veins, arterial blood will be found pulsating in the syringe barrel. Oxygen saturation tests carried out on the blood of these vessels will show a much higher percentage of saturation than that in other veins. At the author's clinic *272* patients with varicose veins of an advanced nature were analyzed. Of these 65 were found to have arteriovenous connections. In a recurrent group of 61 patients approximately half had these arterial connections. The saphenous vein and its branches should be exposed in the groin and all connections from the arterial or venous side dissected free and widely excised. A 4 inch (10 cm.) section of the saphenous vein should then be removed, the proximal end being divided at the femoral junction. Any other abnormal connections between the artery and vein should be divided. Each of the incompetent venous communicating points should be widely excised and secondary arterial connections likewise divided. The large veins on the lateral aspect of the leg or in the popliteal space must be widely excised en masse, all small connections being divided and ligated. These patients must be examined at six month intervals for a period of several years thereafter. If there is evidence of increasingly dilated veins, these areas should be treated again. The recurrence should be explained to the patient and differentiation of this group from ordinary varicose veins made clear.

DeQuervain's Disease.—According to Hanlon stenosing tendovaginitis of the radial styloid was first described by DeQuervain in 1895. The term "stenosing tendovaginitis of the extensor and abductor tendons of the thumb" is probably the most descriptive. Although DeQuervain's disease is common, it is infrequently diagnosed. In analyzing a series of wrist lesions, the author noted that 38 cases of DeQuervain's disease had been seen in the last five years. The disorder may produce considerable disability due to pain in the thumb, wrist and forearm. It is most common in middle-aged women, who use their wrist and thumb excessively. Chronic trauma is the most frequent exciting cause, although in this series 9 patients noticed symptoms after a single injury. The pain, at first dull, localizing in the region of the radial styloid and radiating into the thumb and hand and up into the forearm, is often neuralgic in charac-

ter and may be worse at night. It is aggravated by motions of the thumb and wrist. In some cases the syndrome is bilateral. There is swelling over the tendon sheath and localized tenderness over the tip of the radial styloid process. A circumscribed thickening of the tendon sheath may be found on palpation, and frequently a cartilaginous thickening is felt over the styloid process situated under the skin, not adherent to underlying bone and moving with flexion and extension of the thumb. The pathognomonic sign may be noted on grasping and quickly abducting the thumb ulnarward. The pain over the styloid tip is excruciating. The possibility of DeQuervain's disease must be considered especially in a patient complaining of pain in the region of the radial styloid process; roentgen studies do not reveal abnormalities. The condition has been erroneously diagnosed as rheumatism, neuritis, periositis, tenosynovitis and tuberculous osteitis. Palliatiye measures often are not successful. The ideal treatment is operation, which promises immediate cure and avoids the prolonged disability of plaster of paris immobilization. An incision 2 inches (5 cm.) long, centering over the radial styloid process, is made with local anesthesia. A small branch of the radial nerve runs superficially across the field and is identified and retracted. The carpal ligament and the tendon sheath are identified and incised. The compressed tendons are thus released. The superficial fascia and skin margins are approximate, and compression bandage is applied for several days. In two or three days full motion of the thumb may be started. In the reported 38 cases treatment by immobilization proved unsatisfactory and surgical treatment was resorted to in all but 6. All of the patients operated on had immediate relief.

Annals of Internal Medicine, Lancaster, Pa.

30:713-894 (April) 1949

*Effects of "Rice Diet" upon Blood Pressure of Hypertensive Individuals. H. A. Schroeder, P. H. Futcher and M. L. Goldman. —p. 713.

Rheumatoid Spondylitis: Observations on Incidence and Response to Therapy Among Veterans of Recent War. E. C. Toone Jr.—p. 733.

Diabetic Indigestion. A. Bassler and A. G. Peters.—p. 740.

Some Unusual Observations in Post Transfusion Reactions: 2 Cases with Autopsy Findings. V. A. Digilio and A. Hochwald.—p. 745.

*Behavioral Response of Patients Seized with Acute Myocardial Infarction. S. W. McLeod.—p. 757.

Historical Review of Physical Examination of Chest. F. M. Pottenger. —p. 766.

Chronic Leukemia of Long Duration: Report of 31 Cases with Duration of Over Five Years. H. C. Moffitt Jr. and J. H. Lawrence. —p. 778.

Primary Carcinoma of Liver: 25 Year Study. G. F. Strong, H. H. Pitts and J. G. McPhee.—p. 791.

Effect on Precordial Electrocardiogram of Insulating Areas of Anterior Chest Wall. A. H. Douglas and J. S. Kalter.—p. 799.

Golden Gate of Medicine. A. Gregg.—p. 810.

Effect of "Rice Diet" on Blood Pressure.—Schroeder and co-workers treated 7 patients, 3 women and 4 men between the ages of 36 and 57, who had arterial hypertension and in whom the nonprotein nitrogen content of the blood was normal, with a diet containing unsalted rice, fruit juices and vitamins, after adequate control observations with a normal diet were made. Diastolic blood pressures were somewhat lower in 3 while they were on the rice diet, but the changes were not striking. Pressures were essentially unchanged in the other 4. One patient with impaired renal function had pronounced hypochloremia with uremia and died. The addition of sodium chloride in 2 cases and the substitution of a normal diet in 3 did not consistently reverse the effects of the rice diet. Changes in blood pressure occurring in 4 additional patients, 3 women between the ages of 23 and 40 and 1 man aged 42, after restriction of sodium chloride alone were of similar magnitude to those observed with the use of the rice diet. Similar changes have occurred in a woman aged 28 after hospitalization alone, without alterations in diet. On the basis of this study, a diet consisting of unsalted rice, fruit juices and vitamins is of questionable value in the treatment of most patients with arterial hypertension. When the disease process was advanced, neither salt restriction nor the rice diet appeared to be efficacious.

Acute Myocardial Infarction.—Of 28 patients with acute myocardial infarctions, interviewed by McLeod, 18 stated that immediately after the onset of pain they walked about with the definite feeling that walking or movement provided them relief. An additional 4 patients gave a history of walking, but they had no conception of why they did it. Another 5 patients felt that their activity was motivated by the necessity to vomit, urinate or defecate and that the walking was necessary to get to the bathroom. Only 1 patient showed no activity of significance. As far as could be determined, activity lasting from fifteen minutes to fifteen hours was an immediate response and was not engaged in after a trial period of rest had failed to relieve the pain. The patient with angina pectoris automatically stops all effort as soon as he is seized with pain. The general thesis is advanced that an additional distinction can be made between the pain of angina pectoris and that associated with a coronary occlusion on the basis of the behavioral response of the patient to his pain. In some instances this response may be of value for clinical diagnosis of coronary occlusion with myocardial infarction when it otherwise might be a matter of doubt or hesitation.

Archives of Dermatology and Syphilology, Chicago

59:251-366 (March) 1949

Virus as Possible Etiologic Agent of Erythema Multiforme Exudativum, Bullous Type: Report of Case. J. A. Anderson, V. Bolin, W. W. Sutow and W. Kito.—p. 251.

Anaplastic Epithelioma. W. Sachs, P. M. Sachs, J. B. Howell and A. Leiby.—p. 263.

Treatment of Early Syphilis with Small Doses of Crude Penicillin. A. E. Walker and M. Utterback.—p. 277.

Keratosis Blennorrhagica: Response to Streptomycin; Report of Case. R. G. Thompson, C. B. White and H. Hailey.—p. 284.

Management of Emotional Factors in Localized Neurodermatitis. W. R. Hubler.—p. 293.

Quantitative Serologic Titer in Post-Treatment Observation of Early Syphilis Treated with Penicillin. M. H. Gustafson and J. H. Bowen. —p. 303.

Lichen Planus in Subtropical Countries: Study of Annular Type with Inverse Localization (Uncovered Surfaces of Skin). A. Dostrovsky and F. Sagher.—p. 308.

Alopecia Due to Metastases from Adenocarcinoma of Breast: Report of Case. F. Ronchese.—p. 329.

Granuloma Pyogenicum Giganteum. S. Ayres Jr.—p. 333.

Contact Dermatitis Due to Phenolphthalein. L. C. Skinner Jr.—p. 338.

Use of Carboxymethylcellulose in Lotions. E. S. Bereston.—p. 339.

Alopecia Areata Associated with Refractive Errors. H. A. Haynes Jr. and T. [illegible] Parry.—p. 340.

Familial Multiple Nevi Flammei. W. B. Shelley and C. S. Livingood. —p. 343.

Keratosis Follicularis with Changes in Skin, Mucous Membrane and Nails: Report of Case. R. H. Harris and C. J. White.—p. 346.

Reactions to Sodium Bismuth Triglycollamate ("Bistrimate"). M. H. Noun and S. Greenhill.—p. 347.

Archives of Neurology and Psychiatry, Chicago

61:227-338 (March) 1949

*Spasmodic Torticollis. II. Clinical Evaluation. E. Herz and G. H. Glaser.—p. 227.

*Id.: III. Surgical Treatment. T. J. Putnam, E. Herz and G. H. Glaser. —p. 240.

Post-Traumatic Vasothrombosis: Clinicopathologic Syndrome. I. M. Scheinker.—p. 248.

Atypical Syndromes Produced by Extramedullary Tumor of Cervical Portion of Spinal Cord. B. C. Meyer and B. D. Fine.—p. 262.

Effect of Glutamic Acid on Intelligence of Patients with Mongolism. F. T. Zimmerman, B. B. Burgemeister and T. J. Putnam.—p. 275.

*Absence of Spasm During Onset of Paralysis in Acute Anterior Poliomyelitis. L. J. Pollock, B. Boshes, I. Finkelman and others.—p. 288.

So-Called Agenesia of Corpus Callosum (Callosal Defect): Anterior Cerebral Dysraphism. O. Marburg.—p. 297.

Spasmodic Torticollis.—Herz and Glaser report on 27 men and 16 women with spasmodic torticollis admitted to the Neurological Institute of New York and followed during the period 1930-1944. The authors consider as presenting "dystonic or true torticollis" those in whom abnormal involuntary motor activity of the neck muscles is the only neurologic symptom; this activity has a predominant dystonic character. Dystonic or true torticollis should be distinguished from dystonia with torticollis, the more generalized syndrome. The course of the disease was static in 34; improvement was apparent in 6; the disease was regarded as cured in 3 patients, and remission occurred in 3. In 27 patients (over 50 per cent of the series) the basic personality pattern was abnormal. A correlation between the degree and the course of torticollis and the amount of psychogenic involvement was not present. Psychologic factors did not appear of major importance at the onset of the illness. The symbolizing explanations of torticollis on the basis of psychiatric and psychoanalytic investigations must respect the fact that the composite symbolic pattern of hysterical movements of the head is entirely different from the sustained dystonic contractions of the various muscles of the neck in torticollis.

Emotional factors can exaggerate an organic dysfunction already present in the structure of the central nervous system. The remarkable influence of affective and sensory stimuli on dystonic torticollis is still unexplained. An organic disorder of the central nervous system is responsible for the typical hyperkinesis of the neck muscles. The clinical picture may be the result of additional conditioning by psychogenic factors.

Surgical Treatment of Torticollis.—Putnam and co-workers operated on 18 patients with spasmodic torticollis. In 16 patients anterior roots of the first three cervical nerves and the spinal accessory fibers were sectioned bilaterally and in 1 patient unilaterally (Foerster-Dandy operation). In 7 of the patients the additional unilateral resection, and in 2 the bilateral resection, of the spinal accessory nerves in the neck was carried out. In 1 case the posterior divisions of the fourth and fifth nerves were resected (Keen's operation) in addition to the intradural operation and the resection of the right spinal accessory nerve in the neck. In 1 patient only the right spinal accessory nerve in the neck was resected. Except for 1 patient with a unilateral intradural operation and another one with bilateral intradural operation, definite reduction of involuntary motor activity occurred. The degree of improvement depended on various factors: 1. The propagation of the dystonic movements must be taken into account. In predominantly unilateral involvement of the neck muscles, the intradural operation alone or combined with resection of the spinal accessory nerve in the neck enables the patient to hold his head straight in the majority of cases, although occasionally some tension of the affected muscles could be felt by the patient. 2. The course of the disease plays an important part in the operative result and its persistence. The results of the operation may be completely nullified by the rapid progression of the disease. 3. In some of the patients in the series not all the steps of surgical denervation have been carried out. Resection of the posterior divisions of the lower cervical nerves might bring additional relief in cases of the progressive type. 4. The psychologic attitude of the patient must be taken into account even in the evaluation of the effects of operation. Bilateral involvement of the neck muscles with painful, severe tensions and little or no emotional background is considered a definite indication for surgical intervention.

Acute Anterior Poliomyelitis.—Pollock and co-workers carried out successive examinations, day and night, of 670 muscle groups in 30 patients with acute anterior poliomyelitis from the time of their admission to the Municipal Contagious Hospital in Chicago until discharge. The total number of examinations of muscle groups was 9,144. The patients were divided into two groups: (1) 16 patients with resulting severe muscular paralysis and (2) 14 in whom the muscles remained unparalyzed or only slightly weak. In no instance was there evidence of muscular spasm. Tenderness occurred in 236 instances (8 per cent) of the total of 2,919 muscle group examinations carried out in the first group of patients. At no time did it exceed 25 per cent. In the same group stretch pain was elicited in only 82 (3 per cent) of 2,653 muscle group examinations. It never exceeded 15 per cent at any time. In the second group of patients tenderness occurred in only 94 (1.5 per cent) of 5,952 muscle group examinations, and stretch pain was practically absent. Stretch pain and tenderness occurred more frequently in completely paralyzed muscle groups but they were noted in only a small percentage of the total muscle group examinations during the development of paralysis. Both tenderness and stretch pain occurred at a time when paralysis had fairly well progressed. With some exceptions, stretch pain usually began only when paralysis had reached its peak and when it had begun to recede.

Archives of Otolaryngology, Chicago

49:243-334 (March) 1949

Microtic Ear. E. M. Holmes.—p. 243.
Fractures of Hyoid Bone: Presentation of 2 Cases, with Review of Literature. E. G. Olmstead.—p. 266.
Salivary Adenocarcinoma of Nasopharynx: Report of Case. K. L. Diehl.—p. 275.
Modified Radical Mastoidectomy: Preservation of Cholesteatoma Matrix; Method of Making Flap in Endaural Technic. S. H. Baron.—p. 280.
Infratemporal Fossa and Masticator Spaces. G. S. Fitz-Hugh.—p. 303.
Blast Perforation of Ear Drum. A. H. Rice.—p. 316.

Archives of Pathology, Chicago

47:99-204 (Feb.) 1949

Protein Component of Golgi Apparatus. I. Gersh.—p. 99.
Ulcers of Upper Part of Gastrointestinal Tract Associated with Acute Damage of Brain. J. P. Wyatt and P. N. Khoo.—p. 110.
*Diet and Cirrhosis of Liver. P. N. Wahi.—p. 119.
Congenital Malformation of Vertebrae (Hemivertebrae) with Aplasia of Corresponding Ribs, Associated with Lateral Meningomyelocele: Report of Case. I. R. Goldman.—p. 153.
Experimental Liposarcoma: Characteristics of Growth Under Low and Under High Caloric Intake. C. G. Tedeschi.—p. 160.
Sacculated Meckel's Diverticulum Incorporated in Wall of Ascending Colon. M. D. Bosse.—p. 175.
Hemangiosarcoma of Spleen. M. Wright.—p. 180.

Diet and Cirrhosis of Liver.—Wahi studied the livers of a large number of patients, who were admitted to the Thomason Hospital in Agra, by the needle biopsy technic. He was impressed by the frequency of hepatic lesions in patients not primarily admitted for disease of the liver. Cirrhosis of the liver is common among orthodox Hindus, who are strict vegetarians, and the poorer classes, who eat what they grow or what is cheapest. Wahi describes a research program in which the effects of various diets on laboratory animals are being investigated with a view to determining the exact role played by diet in the production of cirrhosis of the liver in Indian adults and infants. Rats weighing approximately 50 Gm. and fed a diet high in carbohydrate and low in protein show hepatic damage, which expresses itself as necrosis of the parenchyma. This may end in postnecrotic scarring if the animal lives long enough. Animals weighing over 100 Gm. are more resistant to the effect of this deficient diet and live longer. Their livers show varieties of lesions, like focal or diffuse necrosis, fatty infiltration and incipient cirrhosis. There are two stages in the development of cirrhosis of the liver; the first consists of diffuse fatty infiltration of the liver cells and the second of fibrous tissue proliferation and regeneration of liver cells. Cirrhosis of the liver is not a necessary sequel to injury of the liver cells, and fatty infiltration does not necessarily terminate in cirrhosis. It is possible that some noxious agent, like a toxin, bacterium or a virus, especially in infantile cirrhosis, acts as a precipitating factor. The quantitative determination of fibrous tissue has been found more useful in determining the presence of cirrhotic changes in early stages than the microscopic examination of stained sections.

Archives of Surgery, Chicago

58:243-410 (March) 1949

*Surgical Treatment of Ulcerative Colitis. G. W. Ault.—p. 243.
Degenerative Osteoarthritis of Hip Joint: Survey of Degenerative Arthritis Secondary to Aseptic Necrosis of Femoral Head. T. Horwitz.—p. 251.
Present Status of Injection Treatment of Hernia. A. R. Koontz.—p. 273.
Treatment of Perforation of Gastrojejunal Ulcer by Resection of Stomach and Anastomosis. A. Lurje.—p. 281.
*Use of Human Fibrin Foam and Thrombin Solution as Hemostatic Agents in General Surgery. D. State.—p. 284.
Follow-Up Results of Surgical Treatment for Nonunion of Carpal Scaphoid Bone: Report of Nineteen Cases. C. F. Goeringer.—p. 291.
Reaction in Surgical Wounds to Surgical Gut, Silk and Cotton Sutures. M. D. Pareira.—p. 308.
Extent of Strangulation of Small Intestine Compatible with Life: Experimental Study. J. Gaster, H. A. Davis, P. A. Pritel and R. L. Marsh.—p. 312.
*Osteoid Osteoma: Report of Case with Probable Lesion. P. W. Lapidus and E. P. Salem.—p. 318.
Cystic Emphysema of Lungs. W. E. Burnett and others.—p. 328.
Progress in Orthopedic Surgery for 1946: XI. Conditions Involving Lower Part of Back. R. Beverly Raney.—p. 352.
Id.: XII. Conditions Involving Elbow, Forearm, Wrist and Hand. W. C. Graham.—p. 372.
Id.: XIII. Amputations, Apparatus and Technic. J. W. White.—p. 399.

Surgical Treatment of Ulcerative Colitis.—Ault feels that ulcerative colitis is primarily a medical problem and that patients should not be denied the opportunity to become rehabilitated by medical management. The results of the surgical treatment of early ulcerative colitis are not impressive, although the author is aware of the experimental work now being done in regard to vagotomy. Patients who have had chronic or recurrent ulcerative colitis for several years may be considered candidates for surgery, but discretion must be exercised regarding the extent and timing of the surgical procedures. The author regards as specific indications for surgery: (1) ulcerative colitis with constitutional and visceral degenerative changes,

(2) anorectal complications, (3) polypoid degeneration and carcinoma, (4) obstruction and tumor mass, (5) perforation, abscess and fistula and (6) segmental ulcerative colitis. Acute continuous or recurrent hemorrhage is rarely an indication for surgery. Replacement with whole blood and the administration of protein solutions, vitamins and liver are helpful in these patients. In patients with acute fulminating ulcerative colitis, sepsis, toxemia, acute malnutrition and deranged physiologic process associated with severe denudation of the colon usually result in a serious constitutional decline. These patients are not acceptable candidates for surgery, because the mortality rate is too high. If they survive this phase of the disease, they may be operated on later with greater safety. Acute perforation into the free peritoneal cavity during the initial acute fulminating stage of ulcerative colitis is invariably fatal, and surgical treatment is futile. Operations were performed on 23 of 120 patients with ulcerative colitis with 5 fatalities. Ileostomy alone can be a formidable procedure. Segmental resections, partial colectomies, ileosigmoidostomies, operations for abdominal and visceral fistulas and explorations for obstruction from adhesions were performed. Surgical treatment resulted in the rehabilitation of 17 of the 23 patients, but the author doubts that the results will still be as favorable in a few years from now, since regional enteritis has developed in some patients.

Fibrin Foam and Thrombin Solution as Hemostatic Agents.—State says that at his clinic fibrin foam and thrombin solution have been used as a hemostatic agent in 42 surgical cases. Cholecystectomy was the operation in which it was used most frequently. It was used repeatedly in radical mastectomy, subtotal thyroidectomy, in operations on the liver and in a number of other operations. Fibrin foam and thrombin solution were used with uniformly good hemostasis. It has been of particular value in controlling bleeding from the gallbladder fossa, liver substance and retroperitoneal tissue spaces. Fibrin foam appears to be well tolerated by the tissues. Because the fibrin foam can be left within the tissue, it is a valuable hemostatic agent where packing is practically the only means of controlling hemorrhage, i. e., in bleeding following enucleation of a retrosternal tumor, removal of biopsy specimens of friable vascular tumors and curettage of sinuses with actinomycotic infection. In a patient with a bleeding duodenal ulcer the cessation of hemorrhage coincidental with the administration of human thrombin into the stomach through a nasal tube suggests that the hemostatic agent should be given further trial in actively bleeding duodenal or gastric ulcer.

Osteoid Osteoma.—Lapidus and Salem believe that although a number of cases of osteoid osteoma have been recorded since Jaffe's first description in 1935, the condition frequently remains unrecognized. The authors report the case of a youth, aged 16, which is noteworthy because it is the first on record in which there was an apparently double lesion—one, definitely proved, over the lesser trochanter of the femur and another over the lateral aspect of the shaft of the same femur, inadvertently not confirmed microscopically. Symptoms persisted after removal of the lesion over the femoral shaft, and only after removal of the osteoid osteoma near the lesser trochanter was complete relief obtained.

Arizona Medicine, Phoenix

6:1-80 (March) 1949

Treatment of Craniocerebral Injuries. J. Martin.—p. 21.
Differential Diagnosis of Radiating Pain from Neck and Shoulder Girdle into Upper Extremities. W. A. Bishop Jr.—p. 25.
Riedel's Struma. E. P. Palmer.—p. 31.
Importance of Rh Factor in Surgery and Obstetrics. A. C. Emmel. —p. 32.

6:1-84 (April) 1949

Rest and Exercise in Management of Rheumatic Fever. I. Stevenson. —p. 13.
*Postspinal Puncture Headache. Z. B. Noon.—p. 19.
Surgical Treatment of Pulmonary Coccidioidomycosis (Local Excision of Small Lesions). D. W. Melick.—p. 24.

Headache After Spinal Puncture.—According to Noon headache is the most frequent undesirable secondary effect of spinal puncture. Its incidence has been variously reported as less than 1 per cent and more than 56 per cent. The material analyzed by the author consisted of 1,658 spinal punctures, 1,158 for diagnostic purposes and 500 to induce spinal anesthesia. The etiologic aspects of post spinal puncture headache are not entirely clear; the "leakage" theory is at present the most widely accepted. Some observers have questioned this theory and have placed more emphasis on emotional and psychologic factors. The use of amobarbital sodium for the prevention of headache by some observers lends credence to the major role that emotional factors play in the causation of headache. The author found that sedation with 3 grains of seconal sodium® (sodium 5-allyl-5-[1-methylbutyl] barbiturate) prior to puncture did not result in a lowering of the incidence of postpuncture headache. He likewise found no appreciable difference in the incidence of headache in those who were active soon after puncture and those who were kept recumbent for twenty-four hours. There was an over-all incidence of postpuncture headache of 29 per cent in 1,658 spinal punctures. In only 7 per cent of 500 cases of spinal puncture done for inducing spinal anesthesia did headache develop. The treatment of the headache is symptomatic.

Canadian Medical Association Journal, Montreal

60:329-438 (April) 1949

Medical Resurvey of Nutrition in Newfoundland, 1948. W. R. Aykroyd and others.—p. 329.
*Staphylococcal Pneumonia in Childhood. N. G. B. McLetchie.—p. 352.
*Non-Paralytic Poliomyelitis: Observations on Differential Diagnosis, N. Silverthorne and others.—p. 356.
*Laboratory Studies on Poliomyelitis, Toronto, 1947. A. J. Rhodes, L. McClelland and W. L. Donohue.—p. 359.
Problems of Cataract Extraction in Palestine. J. C. Gillan.—p. 363.
Psychiatry and the General Practitioner. M. B. Etziony.—p. 366.
Review of Pathology and Etiologic Factors in Rheumatic Diseases. L. Lapin and H. Starkey.—p. 371.
Distribution of Streptomycin Sensitive Tubercle Bacilli in Lungs of "Resistant" Patient. A. R. Armstrong and A. M. Walker.—p. 383.
Survey of Food Intakes of Patients Receiving Routine Ward Diets in General Hospital. E. H. Bensley, G. E. Joron and E. K. McDonald. —p. 384.
Problems Involved in Use of Dicoumarol in Acute Coronary Thrombosis. J. H. B. Hilton, W. M. Cameron, S. R. Townsend and E. S. Mills. —p. 386.
Self-Demand Feeding of Infants. C. K. Rowan-Legg.—p. 388.
Porphyria. C. Slade.—p. 392.
Regression of Diverticula Following Relief of Vesical Neck Obstruction. C. Schneiderman.—p. 396.
Neurofibroma of Small Intestine Causing Complete Obstruction. J. R. Smith and E. A. MacNaughton.—p. 399.

Staphylococcic Pneumonia in Childhood.—McLetchie calls attention to the highly invasive and toxic potentialities of staphylococci and to the increasing incidence of staphylococcic pneumonia in infancy and childhood. He illustrates this by the description of the sudden and unexpected deaths of 2 infants in the nursery of a small rural hospital and by a summary of deaths from staphylococcic pneumonia in childhood occurring at Regina General Hospital. That the Staphylococcus is a major pathogen in primary pneumonia in infancy and childhood is borne out by an analysis of the cases of pneumonia in children up to 12 years of age who were examined post mortem in the period 1939 to 1948. Cases of aspiration of food or vomitus were excluded. The cases reviewed by the author show that in Regina the Staphylococcus is the only organism commonly producing fatal pneumonia in infancy and childhood. Recently the organisms encountered in southern Saskatchewan have been resistant to penicillin and sensitive to streptomycin.

Nonparalytic Poliomyelitis.—Silverthorne and associates point out that a diagnosis of nonparalytic poliomyelitis is seldom made with confidence except during the summer and fall when cases of paralytic disease are also seen. Facilities for the laboratory diagnosis of poliomyelitis have recently become available. The authors have attempted to correlate clinical observations with laboratory findings. This study was made necessary by reports that in the fall of 1947 mild "poliomyelitis-like illnesses" were prevalent in the United States and Canada. The plan was to carry out tests for poliomyelitis virus, other viruses and bacterial infections in cases of suspected nonparalytic poliomyelitis. The clinical, biochemical, bacteriologic and hematologic studies are reported in this paper and the virus studies in the following communication. This report relates to 37 patients with the nonparalytic form of the disease

admitted at the "peak" of the epidemic in September and October; patients with paralytic disease were being admitted at the same time. Approximately half of the group of 37 patients with suspected nonparalytic poliomyelitis had a mild illness that in nonepidemic times would seldom be diagnosed as poliomyelitis. The illness in the other half was more severe. Only 4 out of 21 patients showed a raised total protein level in the cerebrospinal fluid persisting for several weeks after onset, and this contrasted with the observations in patients with paralytic disease, in which 15 out of 20 had such a rise. Poliomyelitis virus was isolated from the stool in only 4 of 20 nonparalytic patients studied, representing both the mild and the severe illness. In 1 case the infection was proved to be due to mumps. Without serologic tests, differentiation between meningitis due to the viruses of poliomyelitis and mumps may be difficult, especially where the meningeal reaction precedes parotitis. The authors believe that in the past in many cases mumps meningitis or encephalitis has been wrongly diagnosed as poliomyelitis. It is suggested that a provisional diagnosis of nonparalytic poliomyelitis is justified and that there may be some other reason to account for failure to isolate virus. The possibility should be considered that some of the patients were infected with another virus.

Laboratory Studies on Poliomyelitis.—Rhodes and co-workers report a combined clinical and laboratory study in 37 patients with lymphocytic meningitis, regarded clinically as nonparalytic poliomyelitis, admitted to the Hospital for Sick Children, Toronto, Canada, during the 1947 "poliomyelitis season." An effort was made to establish the precise cause in as many of these cases as possible and, to this end, a series of tests for viral agent was carried out. Poliomyelitis virus was sought by inoculation of raw stool extracts nasally in Rhesus monkeys and etherized extract administered intraperitoneally or intradermally. Five patients with paralytic disease were examined, and poliomyelitis virus was recovered from the stools of 3. Tests were carried out in 20 patients with nonparalytic disease, but poliomyelitis virus was isolated from the stools of only 4 patients. Serologic tests for mumps showed that one of the cases regarded clinically as a case of nonparalytic poliomyelitis was mumps meningitis. Results of tests of acute and convalescent phase serums of the patients with nonparalytic disease for evidence of infection by St. Louis encephalitis, lymphocytic choriomeningitis and Western and Eastern equine encephalomyelitis viruses were all negative. No viruses were isolated by inoculation of cerebrospinal fluid in laboratory animals and fertile eggs. Virus studies thus failed to confirm the clinical diagnosis of nonparalytic poliomyelitis in 15 of 19 cases. It is tentatively suggested that a "poliomyelitis-like" illness, not due to the classic type of virus, was prevalent in Ontario in 1947 at the same time as typical poliomyelitis.

Minnesota Medicine, St. Paul

32:337-448 (April) 1949

Postoperative Complications of Thyroidectomy. D. C. MacKinnon.—p. 361.
Control of Tuberculosis in Minnesota. P. R. Beckjord.—p. 373.
Survey of Valvular Heart Disease in 1,000 Cases of Pulmonary Tuberculosis. H. L. Neuenschwander, J. R. Miller and J. F. Briggs.—p. 378.
Positions of Patient—Their Effect on Spinal Anesthesia. F. Cole.—p. 380.
Advantages of Separate Nursery for Premature Infants. S. L. Arey and M. P. Christiansen.—p. 384.
Tractor Drivers' Complaints. E. C. Paulson.—p. 386.
St. Cloud Cancer Detection Clinic. A. H. Wells.—p. 388.

New England Journal of Medicine, Boston

240:529-588 (April 7) 1949

Gastric Suction: Proposed Additional Technic for Prevention of Asphyxia in Infants Delivered by Cesarean Section: Preliminary Report. S. S. Gellis, P. White and W. Pfeffer.—p. 533.
Gynecomastia in Association with Chronic Ulcerative Colitis. L. H. Kyle.—p. 537.
Eosinophilic Granuloma of Rib: Report of Case Observed for Eight Years. A. R. Grant, R. K. House and W. B. Crandell.—p. 541.
Surgery of Autonomic Nervous System. R. H. Smithwick.—p. 543.
Primary Systemic Amyloidosis, Involving Myocardium, Cardiac Valves, Lungs, Spleen, Lymph Nodes and Blood Vessels: Severe Purpuric Hemorrhages of Skin, Intestines and Peritoneum.—p. 572.
Plasmocytic, Multiple Myeloma; Myeloma Kidney.—p. 578.

New Orleans Medical and Surgical Journal

101:461-516 (April) 1949

Introduction to American Academy of General Practice. S. R. Truman.—p. 461.
Trends of Medical Practice. P. A. Davis.—p. 462.
Home Obstetrics. D. G. Miller.—p. 467.
Coronary Artery Heart Disease. D. D. Warren.—p. 471.
Ethics in Medical Practice. K. Rand.—p. 475.
Essential Considerations of Chronic Diarrheas. J. S. D'Antoni.—p. 478.
Pyloric Stenosis and Pylorospasm. C. E. Hamilton.—p. 482.
General Practitioner and National Medicine. A. C. Sudan.—p. 484.
Urinary Tract Infections During Pregnancy. H. T. Beacham, W. D. Beacham and D. W. Beacham.—p. 490.
Basic Treatment of Rheumatoid Arthritis. T. E. Weiss.—p. 496.
Gynecic Symptom Complexes. W. F. Guerriero.—p. 502.

101:517-564 (May) 1949

Decortication of the Lung. W. W. McCook.—p. 517.
Disseminated Coccidioidomycosis: Report of Case in Louisiana. A. N. Evans, O. J. Andy and O. J. Labarge.—p. 525.
Reflex Sympathetic Dystrophy. S. Halle.—p. 529.
*Hypertension Treated by Irradiation of Adrenals; with Report of 23 Cases. A. S. Alexander and R. W. Young.—p. 536.
Spontaneous Perirenal Hematoma: Two Case Reports. H. Q. Gahagan.—p. 541.
Thoraco-Abdominal Injuries. D. B. Williams.—p. 544.
Subtaloid Dislocation of Foot: Case Report of the Outward Type. C. V. Hatchette.—p. 549.

Hypertension Treated by Irradiation.—Alexander and Young followed the work of Raab, Soule and Bougoslavskaia in treating 23 patients with hypertension by roentgen irradiation over the adrenal glands and lower dorsal sympathetic chains. The patients were given six successive treatments alternating on the right and left sides, so that at each treatment a skin dose of 250 r was delivered. Nausea, the main side effect, was controlled by oral administration of vitamin B complex. Vascular hyperreactive patients, patients with latent hypertention and patients with vascular reactions occurring from secondary factors, such as nephritis, atrophic kidney, Buerger's disease, hyperactive adrenals, hyperactive carotid sinus, allergy and coarctation of the aorta, responded most favorably to treatment. The most satisfactory response was in the group of vascular hyperreactive patients, the group with secondary hypertension ranking second in response and the group with latent hypertension third. Little or no response was obtained in patients with diffuse vascular disease. The most striking relief was in patients with anginal pain; they were relieved of pain for long periods or permanently, which allowed them to resume a normal life. The value of this method of treatment in preventing vascular hyperreactive patients, who are usually young persons, from becoming latently hypertensive is still under study. Follow-up of 1 patient with Buerger's disease revealed that the patient was able to take extended hikes of 2 to 5 miles without any evidence of claudication. Irradiation treatment of this type is contraindicated in patients with symptoms of primary adrenal insufficiency, with coronary thrombosis within the past three months, with tuberculosis of the kidney or peritoneum and with cardiac decompensation.

Pediatrics, Springfield, Ill.

3:401-574 (April) 1949. **Partial Index**

Child Health Services and Pediatric Education. W. R. Sisson and J. P. Hubbard.—p. 401.
*Therapy and Prognosis of Fibrocystic Disease of Pancreas. D. H. Andersen.—p. 406.
Renal Clearances of Sodium Penicillin G, Procaine Penicillin G and Inulin in Infants and Children. H. L. Barnett, H. McNamara, S. Shultz and R. Tompsett.—p. 418.
Simplified Infusion Set for Infants. M. Sutton.—p. 423.
BCG Tuberculin Studies: Experimental and Clinical Investigation. J. H. Magnusson and A. Lithander.—p. 429.
Acute Serous Meningitis and Encephalitis Complicating Scarlet Fever. L. K. Sweet.—p. 442.
Effect of Smallpox Vaccination During Pregnancy on Incidence of Congenital Malformations. M. Greenberg, A. Yankauer Jr., S. Krugman and others.—p. 456.
Central Autonomic Dysfunction with Defective Lacrimation. C. M. Riley, R. L. Day, D. McL. Greeley and W. S. Langford.—p. 468.
Studies in Relation of Hemolytic Streptococcus to Rheumatic Fever: VI. Comparison of Streptococcal Antihyaluronidase with Antibodies to Other Streptococcal Antigens in Serum of Patients with Rheumatic Fever and Acute Streptococcal Infection: Mucin Clot Prevention Test. T. N. Harris, S. Harris and R. L. Nagle.—p. 482.

Fibrocystic Disease of the Pancreas.—Andersen discusses the etiologic aspects of the respiratory lesion in fibrocystic disease of the pancreas and summarizes the congenital and nutritional hypotheses. She shows that there is no morphologic

evidence that a specific congenital abnormality exists in the bronchi or in their secretion. The microscopic appearance of the mucus does not resemble that of the contents of the pancreatic ducts but does resemble the mucus seen in some other clinical conditions, notably asthma. A physiologic congenital abnormality of the bronchi is possible but unproved. Evidence is presented that dietary therapy improves the growth curves of infants in whom fibrocystic disease was diagnosed and treated before a respiratory infection developed. The absorption of vitamin A, and presumably of other fat-soluble specific substances, is affected by diet. The author presents 22 cases of fibrocystic disease without clinical evidence of respiratory infection. Twenty-one of the patients were first seen after penicillin became available, but only 11 have received it. The majority of the 22 patients were given dietary therapy before a cough had been present for as long as two months. This record is presented as evidence in favor of a nutritional factor in the causation of the respiratory infection.

Physiological Reviews, Baltimore

29:1-90 (Jan.) 1949

Biological Rhythms and Cycles. N. Kleitman.—p. 1.
Initiation and Early Changes in Character of Heart Beat in Vertebrate Embryos. B. M. Patten.—p. 31.
Factors Controlling Development and Progression of Diabetes. A. Lazarow.—p. 48.
Diabetes and Insulin-Administration Problem. J. J. Lewis.—p. 75.

Public Health Reports, Washington, D. C.

64:403-438 (April 1) 1949

Tuberculosis Mortality in the United States, 1947. S. A. Lewis.—p. 405.
Collodion Agglutination Test for Histoplasmosis. S. Saslaw and C. C. Campbell.—p. 424.
Characteristics of Commercial X-Ray Intensifying Screens and Films—IV. W. W. Van Allen.—p. 430.

64:439-470 (April 8) 1949

Statistical Studies of Heart Disease: IV. Mortality from Heart Disease (All Forms) Related to Geographic Section and Size of City. M. Gover. —p. 439.
Raffinose Serum Tellurite Agar Slants as Replacement for Loeffler's Medium in Diphtheria Diagnosis. O. R. Whitley and S. R. Damon. —p. 457.

64:471-498 (April 15) 1949

Work of State and Local Industrial Hygiene Agencies. V. M. Trasko. —p. 471.
Cobalt and Dust Environment of Cemented Tungsten Carbide Industry. L. T. Fairhall, R. G. Keenan and H. P. Brinton.—p. 485.

64:499-522 (April 22) 1949

Q Fever Studies in Southern California: III. Effects of Pasteurization on Survival of C. Burneti in Naturally Infected Milk. R. J. Huebner, W. L. Jellison, M. D. Beck and F. P. Wilcox.—p. 499.

64:523-550 (April 29) 1949

Time Analysis of Public Health Nursing Service: Alameda County Health Department, 1946-1947. J. C. Malcolm, J. W. Moreland, R. Hopkins and M. A. Snyder.—p. 523.
*Isolation of Brucella Abortus from Hogs. N. B. McCullough, C. W. Eisele and E. Pavelchek.—p. 537.

64:551-588 (May 6) 1949

Use of Yeast-Phase Antigens in Complement Fixation Test for Histoplasmosis: III. Preliminary Results with Human Sera. C. C. Campbell and S. Saslaw.—p. 551.
Persistence of Fluoroscopic Screens. W. W. Van Allen.—p. 560.
Demonstration of Tubercle Bacilli in Sputum Smears: Selection of Choice Particles Compared with Various Sodium Hydroxide Concentration Techniques. G. A. Spendlove, M. Cummings and R. A. Patnode.—p. 574.
Characteristics of Commercial X-Ray Screens and Films. V. W. W. Van Allen.—p. 581.

Isolation of Brucella Abortus from Hogs.—McCullough and associates point out that Brucella suis is regarded as the causative agent of brucellosis in swine, although Brucella melitensis has been isolated from hogs by some investigators. It is a general belief that Brucella abortus is not pathogenic for swine. The authors obtained submaxillary lymph nodes in a program of routine weekly sampling from hogs slaughtered in a packing plant in Chicago. This program has now extended over six months. The nodes were removed with sterile instruments, placed in individual sterile screw-capped glass jars and returned to the laboratory. Here each node was removed from its container, trimmed of fat, well seared in a flame and sectioned and the cut surface directly streaked on the surface of trypticase-soy ager medium. Sterile instruments were used throughout and resterilized between use on individual specimens. The inoculated plates were incubated at 37 C. in an atmosphere of 10 per cent added carbon dioxide. With this method Br. abortus was recovered from the lymph nodes of 8 hogs. All eight strains of Br. abortus adhered to the differential characteristics of the species. The occurrence of Br. abortus in swine has bearing on the brucellosis control program in domestic animals. It may also clarify some points in the epidemiology of the disease in man.

Radiology, Syracuse, N. Y.

52:465-620 (April) 1949

Arthrograms. H. Kehkian and E. K. Lewis.—p. 465.
Electrokymography of Heart and Great Vessels: Correlation with Roentgenkymography in Clinical Case Studies. H. M. Stauffer and J. Jorgens.—p. 488.
Evaluation of Needle Aspiration Technic in Breast Lesions. J. W. Budd.—p. 502.
*Value and Limitations of Aspiration Biopsy for Lung Lesions. G. P. Rosemond, W. E. Burnett and J. H. Hall.—p. 506.
*Diagnosis of Bronchogenic Carcinoma by Cytologic Methods. S. M. Farber, M. A. Benioff and A. K. McGrath Jr.—p. 511.
Minimal Tuberculosis: Problems in Roentgenologic Interpretation. I. D. Bobrowitz and A. Hurst.—p. 519.
Radium Therapy in Carcinoma of Female Urethra. R. E. Fricke and J. T. McMillan.—p. 533.
Carcinoma of Thyroid Gland. W. E. Howes and M. N. Foote.—p. 541.
Graves' Disease: Twenty-Five-Year Follow-Up of Cases Receiving Roentgen Therapy. J. M. Read.—p. 557.
Roentgen Therapy of Carcinoma of Skin of Eyelids. J. A. del Regato. —p. 564.
Effects of Radiation Therapy on Urinary Excretion of Niacin and Riboflavin in Patients with Malignant Diseases: Relationship to Radiation Sickness. J. L. Jarvis and D. Cayer.—p. 574.
Anti-Histamine Ointments for Skin Protection in Radiation Therapy. M. P. Mains.—p. 579.

Aspiration Biopsy of Lung Lesions.—Rosemond and associates practiced needle biopsy in diagnosing 272 malignant pulmonary lesions in 231 patients since 1936. They have been impressed with the efficacy of the method. They utilized this method without first using a narcotic, and the patient often walked back to his room. The procedure is simple and should be used when a definite diagnosis of carcinoma cannot be made by bronchoscopy or by sputum analysis. The hazards involved can be minimized if precautions are observed. The authors have not had a serious pneumothorax in any patient who did not show roentgen evidence of pulmonary emphysema. They did not see empyema as the result of their traversing an infected lung, although they did not utilize this procedure when a pneumothorax was present or when the layers of visceral and parietal pleura were not in apposition. They saw no evidence that tumor is spread along the needle track on withdrawal of the needle. The method is especially efficacious in peripheral lesions. Although a tissue diagnosis cannot be obtained when calcification is present in a peripheral nodule, the nodule can be moved visibly and calcification palpated with the needle so that at least a tentative diagnosis can be made in such cases. The method lends itself especially well to soft carcinomas peripherally located in the lung. The authors had little success in diagnosing firm, solid, benign lesions or lymphoblastomas. Success was limited also when they attempted to diagnose lesions which cannot be definitely visualized and when they aimed solely at the base of an atelectatic area. The method is relatively useless unless a biplane or multiplane fluoroscope, a competent fluoroscopist and a pathologist are available.

Cytologic Methods for Diagnosis of Bronchogenic Carcinoma.—Farber and co-workers have been evaluating the Papanicolaou method in sputum and bronchial secretion for the past two years. They have made cytologic studies on 2,228 specimens, representing 671 cases, of which 100 have been proved to be cancer of the lung. Sputum from 89 of the 100 proved cases was examined and cells "consistent with malignancy" or "suspicious" were found in 63, or 71 per cent. Bronchoscopically obtained secretions in 45 proved cases were examined, and positive findings were reported in 26 (58 per cent). When a complete series of five sputum specimens was studied, the accuracy of cytologic diagnosis was increased to 90 per cent (63 of 69 proved cases). In 20 of the 26 proved

cases missed by sputum examination, the number of specimens examined was inadequate. The caution exercised in the application of diagnostic criteria was justified, since in no case in which cells were reported as "consistent with malignancy" and in which pathologic examination was obtained did the sections fail to reveal cancer. When sputum and bronchoscopically obtained smears from the same patient have been examined, the accuracy has been comparable. The authors stress that in cases in which equivocal silent lesions of the lungs and bronchi were discovered by roentgen examination of apparently healthy persons, as well as in cases of clinically manifest chest disease, it has been possible in many instances to determine the malignant nature of the lesions when exfoliated neoplastic cells were found in sputum or bronchial aspirations.

Rocky Mountain Medical Journal, Denver

46:265-344 (April) 1949

Chemotherapy of Cancer. B. J. Duffy Jr.—p. 284.
Familial Leg Ache in Children. E. M. Jeppson.—p. 288.
Acute Intussusception Due to Torsion of Meckel's Diverticulum: Operation and Recovery. G. J. Harmston and W. E. Cragun.—p. 291.
Management of Acute Cholecystitis. E. W. Barber.—p. 293.
Distribution of Physicians and Physicians' Services in Colorado in 1948. III. Other Licensed Practitioners of Healing Arts and Effects of Colorado Basic Science Law. H. J. Dodge, M. M. Clapper and W. Darley.—p. 296.
Jejuno-Ileal Diverticula: Review of Literature and Case Reports. R. E. Watts and S. M. Ramer.—p. 301.
Further Experience with Methergine as Oxytocic. M. J. Baskin.—p. 304.

Surgery, St. Louis

25:489-654 (April) 1949

*Experimental Study of Collateral Coronary Circulation Produced by Cardiopneumonopexy. B. N. Carter, E. A. Gall and C. L. Wadsworth.—p. 489.
Determination of Blood Iodine: Useful Method for Clinical Laboratory. A. C. Connor and others.—p. 510.
*Bronchiectasis: Its Curative Treatment by Pulmonary Resection: Analysis of 96 Cases. A. Ochsner, M. DeBakey and P. T. DeCamp.—p. 518.
Anatomic Guide to Intersegmental Plane. B. H. Ramsay.—p. 533.
Use of Glycine in Treatment of Peripheral Vascular Disease. J. R. Gustafson, K. N. Campbell, B. M. Harris and S. D. Malton.—p. 539.
Amputation for Gangrene Due to Occlusive Arterial Disease. S. Perlow and H. A. Roth.—p. 547.
Experimental Anastomoses of Vessels to Heart: Possible Application to Superior Vena Caval Obstruction. F. Gerbode, J. Yee and F. F. Rundle.—p. 556.
Coexistence of Intra-Abdominal Lesions in Patients with Epigastric Hernia. J. M. Hoffman and G. D. Wood.—p. 566.
New, Safe, Simple Apparatus for Obtaining Negative Suction for Patient with Indwelling Gastrointestinal Tube. K. A. Merendino and J. A. Phelan.—p. 576.
Modified Synthetic Predigested Aliment for Protracted Jejunostomy Feeding. F. Hollander and H. A. Sober.—p. 580.
Excision of Small Tumors of Skin of Face with Special Reference to Wrinkle Lines. C. J. Kraissl and H. Conway.—p. 592.
Sigmoidoscope with Proximal and Distal Illumination. R. Turell.—p. 601.
Antihistamine Therapy in Thrombophlebitis Migrans: Case Report. F. A. Selecman and E. W. Miller.—p. 605.
Multiple Aorto-Intestinal Fistulas Secondary to Swallowed Foreign Body. J. D. Hoyle.—p. 608

Collateral Coronary Circulation Produced by Cardiopneumonopexy.—Possible sources of collateral blood supply to myocardium are the thoracic wall, including the pectoral muscles, the internal mammary artery, the intercostal arteries, the pericardium, the omentum and the lung. The lung appeared to provide the most effective source for a collateral blood supply to the heart. The authors selected asbestos as the irritant for the production of adhesions in the operation which they termed cardiopneumonopexy. This report describes the effects obtained with cardiopneumonopexy in mongrel dogs. They obtained gross and microscopic evidence that by this operation new vascular channels can be produced between the myocardium and the adherent lung, but the amount of blood flow, the direction of the flow or the duration of the patency of these channels was not established. In the instances in which cardiopneumonopexy was performed on normal hearts, injections of 10 per cent suspension of india ink in blood at normal pressures revealed some filling of the superficial vessels in the myocardium, but in cases in which the heart had been rendered ischemic by coronary artery ligation there was considerably greater filling not only of the superficial vessels but of the deep ones as well. Comparison of specimens obtained from dogs in which ligation of the anterior descending branch of the left coronary artery had been performed after cardiopneumonopexy with those from dogs in which ligation alone was done revealed less extensive infarcts and a lower mortality rate in the protected series. Whereas the mortality rate in the protected series was 20 per cent, in animals with simple ligation it was 48 per cent. Severe infarction occurred in 75 per cent of animals with simple ligation but in only 23 per cent of animals with ligation subsequent to cardiopneumonopexy.

Bronchiectasis; Treatment by Pulmonary Resection.—Of the 96 cases of bronchiectasis reviewed by Ochsner and associates, 74, or more than three fourths, concerned patients less than 40 years of age. Bronchiectasis usually appears after an acute infection of the lower part of the respiratory tract. Weak expulsive efforts may result in atelectasis, and as the atelectasis persists the retained infected secretions cause inflammation and destruction of the bronchial walls with subsequent dilatation. The average duration of symptoms in the patients was thirteen years. The chief complaint is usually chronic cough with expectoration. The quantity of sputum may be as much as 12 ounces (340 Gm.) or more daily. Hemoptysis is frequent and sometimes massive. Foul sputum and clubbed fingers occur only in the cases of advanced disease. The apparent paradox of severe symptoms and minimal physical observations and roentgenographic abnormalities should suggest the diagnosis of bronchiectasis. The essential diagnostic method is bronchographic examination, which is fluoroscopic and roentgenographic examination following the instillation of a radiopaque substance into the bronchial tree. Although significant palliation may be obtained by conservative measures, pulmonary resection is the only satisfactory form of surgical therapy. The more localized the disease, the more amenable it is to resection, but careful segmental and lobar resections can eradicate even bilateral disease involving several lobes. In bilateral bronchiectasis, if the major involvement is on one side the degree of relief obtained following resection of this portion of the pulmonary bed may be sufficient to obviate the necessity of resection on the second side. Accurate diagnosis is essential; preparation must be thorough. Expert anesthesia and adequate supply of blood are required. Postoperative management demands a degree of vigilance scarcely equaled in any other thoracic or general surgical condition. There was no hospital fatality in the last 92 operations. Subsequent death from pulmonary disease occurred in 3.1 per cent of the cases. The incidence of irremedial unsatisfactory results was 4.2 per cent. With present experience and facilities most of these unsatisfactory results are preventable. Pulmonary resection is indicated in any established case of bronchiectasis, provided the disease is neither too mild nor too extensive, the patient is not elderly and there are no medical contraindications.

Tennessee State Medical Assn. Journal, Nashville

42:75-114 (March) 1949

Destruction of Retinal Angiomas by Diathermy. P. M. Lewis.—p. 75.
Virus Hypothesis. F. R. Haselton.—p. 79.
Tennessee's Program of Practical Nurse Training. W. A. Seeley.—p. 80.
Use of Methadone to Combat Withdrawal Symptoms of "Dilaudid" Addiction: Case Report. B. R. Powers.—p. 83.

42:115-146 (April) 1949

Socialized Medicine. E. T. Brading.—p. 121.
Treatment of Alcoholism by Conditioned Reflex Method. J. A. Wallace.—p. 125.
Wherefores and Whyfores of General Practice. D. J. Johns.—p. 129.

Virginia Medical Monthly, Richmond

76:159-212 (April) 1949

Outline of Proposed Experiments and Observations for Further Investigation of Poliomyelitis. J. H. Smith.—p. 161.
Spontaneous Hemopneumothorax—Report of 2 Cases. C. L. Harrell.—p. 167.
Treatment of Carcinoma of Esophagus. F. P. Coleman.—p. 170.
Results of 1,000 Examinations in Bessie Dunn Miller Cancer Detection Center. W. E. Bray Jr.—p. 174.
Echinococcic Cyst of Liver. H. L. Skinner and R. R. Smith.—p. 178.
Subcutaneous Plasma Infusion in Convalescent Children. I. C. Grant, M. G. Irons, J. S. Morris and J. C. Forbes.—p. 182.
Ovarian Agenesis (Turner's Syndrome) Report of Case with Post Mortem Findings. J. M. Moss and K. F. Menk.—p. 186.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

18:1-72 (July) 1948. **Partial Index**

Progress of Surgery, with Especial Reference to Intracranial Surgery. H. Cairns.—p. 3.
Treatment of Bilateral Renal Calculi. M. S. S. Earlam.—p. 16.
Cysts of Mesonephric Tract. E. R. Reay.—p. 26.
Rupture of Biceps Brachii, with Report of Case of Bilateral Rupture of Long Tendon. H. K. Cristie.—p. 37.
*Massive Hemorrhage per Rectum Due to Disease in Meckel's Diverticulum: Report of Case. O. J. Ellis.—p. 51.

Rectal Hemorrhage Due to Disease in Meckel's Diverticulum.—Ellis reports the case of a young woman, aged 18, who bled profusely from her rectum. On the two following days her bowels moved twice daily, there being a small amount of bright blood with each motion. Later she had another profuse hemorrhage and was hospitalized. Her erythrocyte count was only 3,000,000. She was given a blood transfusion. Proctoscopic and sigmoidoscopic examination revealed a normal rectum and no hemorrhoids. The sigmoid was normal, but there was a small amount of bright blood seen at the apex of the sigmoidoscope. A provisional diagnosis of ulceration in a Meckel's diverticulum was made. Operation revealed a Meckel's diverticulum situated about 2½ feet (76 cm.) from the ileocecal junction. The apex of the diverticulum was attached to the right of the umbilicus. There were two vessels on the peritoneal surface of the proximal half of the diverticulum, which was removed. The patient made an uneventful recovery. Macroscopic examination of the surgical specimen disclosed a healed ulcer, and microscopic study of sections revealed typical gastric mucosa. Review of the literature convinced the author that the presence of aberrant gastric mucosa is an almost constant feature in the cases in which ulceration takes place in the diverticulum.

British Medical Journal, London

1:691-736 (April 23) 1949

Women War Captives in Russia. R. F. A. Dean.—p. 691.
P. T. A. P.: The Present Position. L. B. Holt and G. Bousfield.—p. 695.
Method of Increasing Lung Blood Supply in Cyanotic Congenital Heart Disease. N. R. Barrett and R. Daley.—p. 699.
*Association of Maternal Obesity, Large Babies and Diabetes. J. A. L. Gilbert.—p. 702.
*Glossitis in Addisonian Pernicious Anemia: Effect of Synthetic Vitamins of B Complex. A. Brown.—p. 704.
Unusual Symptoms in Petrol-Tank Cleaners. Inder Singh.—p. 706.
Staphylococci in the Newborn: Their Coagulase Production and Resistance to Penicillin and Streptomycin. G. Martyn.—p. 710.

Maternal Obesity, Large Babies and Diabetes.—Gilbert cites reports which indicate that maternal obesity, an abnormally high fetal loss rate, and an unusually high incidence of large babies may occur many years before the onset of clinical diabetes, and that the investigation of women with such obstetric histories may show that a considerable proportion of them become diabetic in the course of time. Gilbert investigated 21 women with obstetric histories of unexplained abortions, miscarriages, intrauterine deaths, stillbirths and neonatal deaths, and the birth of babies weighing 10 pounds (4,536 Gm.) or more. Six of these patients were found to be diabetic. All 6 were grossly obese, and 5 had had babies weighing 10 pounds or more. Evidence is brought to show a correlation between progressive maternal obesity, the birth of unusually large babies and ensuing maternal diabetes. The clinical and experimental observations suggest that an excessive secretion of the anterior pituitary growth factor during pregnancy may account for the production of progressive maternal obesity, large babies and ultimate maternal diabetes.

Glossitis in Pernicious Anemia.—Brown describes 7 patients with pernicious anemia, each of whom had a sore, red, raw-looking tongue. One also had angular stomatitis and vascularization of the cornea. In each case it was possible to control these changes with a single member of the vitamin B complex in pure form. Four cases of glossitis responded to calcium pantothenate and 1 each to nicotinic acid and folic acid. One case responded first to nicotinic acid and later to riboflavin. The patient with glossitis, angular stomatitis and vascularization of the cornea responded to riboflavin. It is suggested that the epithelial changes described reflect a breakdown in some metabolic system which may be similar to that responsible for the megaloblastic marrow and the neurologic complications of pernicious anemia.

Journal of Pathology and Bacteriology, Edinburgh

60:529-660 (Oct.) 1948. **Partial Index**

Selective Medium for Isolating Staphylococcus Based on Differential Inhibiting Effect of Increased Concentrations of Sodium Chloride. H. B. Maitland and G. Martyn.—p. 553.
Toxic Effects of Salicylate on Fetus and Mother. A. V. Jackson.—p. 587.
Bacterial Variation and Toxin Production by Corynebacterium Diphtheria. C. R. Amies.—p. 595.
Redistribution of Body Fluids in Dysenteric Toxemia. R. D. Senevi-ratne.—p. 609.
Acute Parietal Endocarditis in Case of Status Asthmaticus: Possible Early Stage of Löffler's Endocarditis Parietalis Fibroplastica with Eosinophilia. B. Lennox.—p. 621.

Lancet, London

1:677-718 (April 23) 1949

Reorientations in Neurology. C. Symonds.—p. 677.
Effect of Diethylstilbestrol on Urinary Excretion of Pregnanediol and Endogenous Estrogen During Pregnancy. I. F. Sommerville, G. F. Marrian and B. E. Clayton.—p. 680.
Idiopathic Renal Acidosis in Infant with Excessive Loss of Bicarbonate in Urine. T. Stapleton.—p. 683.
Preparation and Standardisation of Saccharated Iron Oxide for Intravenous Administration. J. A. Nissim and J. M. Robson.—p. 686.
Case of Louping-Ill in Man: Isolation of Virus. E. G. Brewis, C. Neubauer and E. W. Hurst.—p. 689.
Water-Soluble Vitamin K in Newborn. R. R. Gordon.—p. 692.

Medical Journal of Australia, Sydney

1:369-396 (March 19) 1949

Fetal Losses in Child Birth. W. I. Hayes.—p. 369.
Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects. C. Fortune.—p. 373.
Some Clinical Aspects of Rheumatic Fever. K. Maddox.—p. 375.
Present Status of Penicillin Therapy in Treatment of Subacute Bacterial Endocarditis. D. J. Thomas.—p. 377.
Role of Sulphanilamide Prophylaxis in Rheumatic Fever. L. Stokes.—p. 379.
Treatment of Hernia. C. H. Leedman.—p. 380.

1:397-432 (March 26) 1949. **Partial Index**

Surgery in Ulcerative Colitis. A. E. Coates.—p. 397.
Ulcerative Colitis: Ileostomy Life. E. E. Dunlop.—p. 399.
Ulcerative Colitis: Clinical Features, Diagnosis and Treatment. G. A. Penington.—p. 405.
Indications for Tonsillectomy. S. Suggit.—p. 409.
Infantile Cerebral Palsy. C. Burton-Bradley.—p. 413.
Encephalitis and Encephalomyelitis. G. C. Moss.—p. 414.

South African Medical Journal, Cape Town

23:261-284 (April 9) 1949. **Partial Index**

Prefrontal Leukotomy Studies: Report. A. S. van Coller.—p. 261.
Medico-Legal Section: Professional Secrecy. N. C. Masters and H. A. Shapiro.—p. 267.
*Gouty Diathesis: Special Reference to Indians in South Africa. N. Finn.—p. 276.

Gouty Diathesis.—Finn says that gouty (uric acid) diathesis is not infrequent among Indians (Mohammedan as well as Hindu) residing in South Africa. Because Hindus are affected in about the same proportion as Mohammedans, the accepted theories of the past about the causation of gout should be revised. The Mohammedans usually abstain from all alcohol and the Hindus abstain from all animal protein. The blood uric acid level is raised in a large proportion of cases, but not every case of hyperuricemia exhibits clinical signs of gout. The blood sedimentation rate was usually increased in the acute and subacute cases, while it was normal in most of the chronic cases. Gouty arthritis may start in any joint. The polyarticular type is common. From clinical observations the writer is of the opinion that the gouty diathesis is caused by some liver dysfunction. Colchicum is the only drug effective in acute cases and of value also in chronic cases of the gouty diathesis. Its

pharmacologic action is not clear, but the writer is inclined to suggest that it acts on the liver cells. Brewers' yeast in large doses proved beneficial and should be taken over many weeks. For swelling and pain of feet and hands galvanic baths are recommended. The diet should be a high protein and high carbohydrate one, fat intake to be reduced to a bare minimum. The majority of gouty patients seen by the writer were not affected by changes in the weather.

Beiträge zur klinischen Chirurgie, Berlin

177:1-152 (No. 1) 1948. **Partial Index**

*Clinical Significance of Diastase Values in Urine for Detection and Treatment of Disorders of Biliary Tract. H. Nusselt.—p. 1.
Fractures of Humerus Near the Elbow in Children (Supracondylic Fracture). A. Büttner and A. Vorwerk.—p. 51.
Indication for Surgical Treatment of Old Gunshot Wound with Missile Lodged in Knee. W. Lambrecht.—p. 77.
Pathogenesis of Acute Suppurating Osteomyelitis and Its Relations to Diagnosis of Acute Concussion and Contusion of Bone. A. Vogl.—p. 113.
Suppurating Gunshot Injuries of Bones. C. Ritter.—p. 93.
Surgical Treatment of Impacted Ureteral Calculus. W. Brosig.—p. 121.

Diastase Content of Urine in Diseases of Biliary Passages.—Nusselt mentions the sites at which diastase is produced and states that it is secreted chiefly into the digestive tract. A portion enters the blood stream and is eliminated in the urine. He discusses fluctuations in the diastase content of the urine in healthy subjects, the determination of the diastase according to the method of Wohlgemuth and the behavior of the diastase in pathologic processes in the neighborhood of the pancreas, particularly the causal connection between biliary calculi and acute disorders of the pancreas. The behavior of the diastase content of the urine was studied in various disorders of the biliary passages. Greatly increased diastase values in the urine are usually due to the pancreas. Pathologic processes in neighboring organs, such as duodenal ulcer, peritonitis or epidemic parotitis, may also be accompanied with increase in diastase. With these conditions ruled out, diastase determinations together with the clinical picture and other functional tests are of great value in the diagnosis and treatment of disorders of the biliary tract. Involvement of the pancreas in biliary disturbances is characterized by early "deviation of the ferment" and later by fluctuations in the diastase values. These are warning signals that the pancreas is threatened and indicate the need for surgical treatment if gallstones are present. Simple irritation of the pancreas, which differs from actual involvement, is characterized by "deviation of the ferment" and usually leads to considerable diastasuria. Necrosis of the pancreas is nearly always accompanied with considerable increase in diastase values. Careful investigations of diastase values in the course of biliary disorders reveal the subsidence of pancreatic lesions and determine the time at which an operation should be carried out so as to guard against surgical failures brought on by cardiac and circulatory insufficiency resulting from a pancreatic lesion. In the treatment of the pancreatic involvement before or after operation for cholelithiasis, the author has found the exclusion of the nutritional reflex of great value; this is accomplished by avoiding the intake of foods and fluids by the natural route. Investigations of the diastase values in 896 patients with biliary or pancreatic disorders revealed the highest incidence of preoperative increase in urinary diastase in choledocholithiasis. In the absence of contraindications choledochotomy is therefore advisable in these cases.

Bibliotek for Laeger, Copenhagen

141:1-40 (Jan.-Feb.) 1949

*Brief Review of Medicamental Treatment of Tuberculous Infection. S. Dahl.—p. 1.

141:41-88 (March-April) 1949

*Brief Review of Medicamental Treatment of Tuberculous Infection. S. Dahl.—p. 41.

Medical Treatment of Tuberculous Infection.—Dahl concludes that every preparation which can produce a stimulating effect and is applied in noninjurious doses can in "suitable" cases exert a favorable action on the course of pulmonary tuberculosis but almost never on tuberculosis of the larynx, lupus or surgical tuberculosis. According to the literature it appears that "suitable" cases are those in which the disease would subside with adequate dietetic hygienic treatment. It is possible that more patients with pulmonary tuberculosis can be benefited by the metal drugs available than could be benefited by earlier agents, such as creosote, guaiacol, iodoform and sodium cinnamate, but the literature on the subject is not especially convincing. The author suggests that, if metallic salt treatment is to be used in patients with pulmonary tuberculosis a metal should be chosen that is a natural constituent of the organism, as copper or iron. In suitable cases, he says, their action is favorable and gives fewer or no by-effects. Whether sulfonamide treatment is applicable in tuberculosis remains to be seen. The vitamins have a favorable effect on the course of tuberculosis. Penicillin is without effect. Streptomycin has a certain effect on tuberculous infection and can be said to be an antituberculous substance. The results of its use, however, are still so contradictory that it is too early to pass definite judgment.

Gynaecologia, Basel

127:201-272 (April) 1949

Investigations on Endometrial Sterility. J. Botella-Llusia, F. Nogales-Ortiz and E. Vilar-Dominguez.—p. 201.
Etiology of Primary Amenorrhea. O. Kaeser.—p. 220.
Capillary Permeability, Serum Proteins and Hematocrit Values in Normal Pregnancy. F. E. Szontagh.—p. 240.
*Diagnosis, Prognosis and Therapy in Tuberculosis of the Endometrium. E. Rabau, J. Herman and J. Casper.—p. 248.
Determination of Hormones in Late Gestoses. E. Eichenberger and O. Käser.—p. 255.

Tuberculosis of Endometrium.—Rabau and co-workers eight years ago began to resort to endometrial biopsy in all women who requested treatment for sterility. Endometrial biopsy was performed in 1,300 sterile women, and in 59 of these endometrial tuberculosis was discovered. Some of these women had normal menstrual cycles and patent fallopian tubes, but none of them became pregnant. Most other investigators who studied endometrial tuberculosis found that it is associated with sterility. No treatment has yet been found to cope with this disease. In general, it remains quiescent, without a tendency to spread, provided the endometrium has not been unnecessarily disturbed. Any action inside the uterus is ill advised and may cause the disease to spread, especially endometrial biopsy, pertubation and salpingography. Although there may be a justification for endometrial biopsy to ascertain the diagnosis, there is none for other measures after the disease has been diagnosed. In most cases tuberculosis of the endometrium remains quiescent, but there are cases where caseation occurs or in which the disease tends to spread. Spontaneous recovery is also possible. Radical operation is advisable if caseation is present.

Maandschrift voor Kindergeneeskunde, Leyden

16:453-484 (No. 11) 1949. **Partial Index**

Congenital Ectodermal Dysplasia: Herpes Infection of Mother as Possible Cause. S. van Creveld and C. van Waalwijk van Doorn.—p. 453.
Megalocardia of Unknown Cause. O. A. Driessen.—p. 460.
*Cirrhosis of the Liver in Nurslings. A. Dekker-Jonker.—p. 465.
Celiac Syndrome. Y. M. Trap.—p. 469.
Acute Virus Myocarditis: Case. D. P. R. Keizer.—p. 475.

Cirrhosis of the Liver in Nurslings.—Dekker-Jonker presents observations of 2 nurslings who were the first children of a healthy couple. Both children died, one after six weeks and the other after eighteen days of life. Both had glycosuria and enlargement of the liver. Necropsy revealed fatty degeneration and beginning necrosis in both. Syphilis had been ruled out. There was no antagonism in the Rh factor in the parents. The bile passages were not obstructed, and no other congenital defects were present. The author believes that the cirrhosis must have had an intrauterine onset. He directs attention to reports in which dietary deficiencies are suggested as probable causes of cirrhosis of the liver and suggests that in further pregnancies the mother of these children be given a diet with high protein and low fat content.

Praxis, Bern

38:319-338 (April 14) 1949

Psychic Hygiene in Sphere of Work of Practitioner. H. O. Pfister. —p. 319.
*Tuberculosis of the Pancreas. E. Witzig.—p. 325.
Clinical Application of Extract Preparation "Resactor"; Contribution to Study of Indication Limits and Report on Results of Resactor Treatment in Cases of Weak Reticuloendothelial System. H. Felberbaum. —p. 328.

Tuberculosis of the Pancreas.—Witzig reports 8 cases of tuberculosis of the pancreas in 6 women between the ages of 16 and 60 and in 2 men aged 21 and 45. Both general and specific lesions may be observed. General lesions may appear as interstitial sclerosis or true pancreatic cirrhosis, perilobular, pericanalicular or perivascular, frequently associated with fatty degeneration. The specific lesions are manifested by granulations or miliary nodules localized in the vascular stroma or interlobular intersfices, by small cavities with caseation, by cold abscesses or by pseudoneoplastic tuberculous lymphoma. The lymphoma is the only lesion in which surgical treatment may offer a chance of success. Biopsy may be of considerable aid in the diagnosis of this type. The symptoms are those of digestive disturbances, pain and pigmentary disturbances such as melanoderma. Depending on the predominance of one or several of these symptoms, five clinical types may be distinguished: icteric, diabetic, dyspeptic, neoplastic and painful; pure or mixed types may be observed. Diagnosis of tuberculosis of the pancreas, particularly in the early stages, is difficult. The course of the disease is chronic, and progressive. Treatment is symptomatic. Surgical treatment is justified for the pseudotumoral forms. Lymphomas of small size may be extirpated. Removal of the tail of the pancreas does not involve great risk, but prognosis is guarded for the surgical removal of the head of the pancreas.

Presse Médicale, Paris

57:325-340 (April 9) 1949

Aureomycin. L. de Gennes and H. Bricaire.—p. 325.
Polymyxin: Its Action on Gram-Negative Organisms. E. Benhamou. —p. 327.
Chloromycetin. E. Farinaud.—p. 329.
*The Place of the New Antibiotics in Clinical Therapy. E. Benhamou.—p. 330.

The Place of the New Antibiotics in Therapy.—This general survey by Benhamou on the new antibiotics is preceded by three separate reports on aureomycin, polymyxin and chloromycetin. In the general survey the author stresses that, although the antibiotics have revolutionized the treatment of infections, they present certain shortcomings and leave certain gaps, particularly in infections wtih rickettsias or viruses and in certain infections due to gram-negative organisms, such as Eberthella typhosa and Hemophilus pertussis. In cases in which resistance develops to penicillin or streptomycin, bacitracin can be used. There is a place for polymyxin and especially for chloromycetin® and aureomycin, drugs which can be administered orally and are effective against disorders refractory to the sulfonamide drugs, penicillin and streptomycin.

Scalpel, Brussels

102:355-378 (April 16) 1949

Early Treatment, Important Factor in the Campaign Against Tuberculosis. H. Masson.—p. 355.
*Does Vaccination Reduce Diphtherial Mortality and Lethality? R. Rendu. —p. 358.

Vaccination and Mortality from Diphtheria.—Rendu says that certain authors maintain that the use of toxoid has greatly reduced the number of deaths from diphtheria and that if diphtheria develops in vaccinated persons it almost never results in death. In order to verify this, the author investigated records of numerous countries. The mortality rate from diphtheria has greatly decreased in certain countries in which vaccination against diphtheria has not been practiced at all or only on a small scale. In others, such as the United States and Canada, where vaccination against diphtheria is extensively employed, the number of deaths has likewise declined. This reduction probably cannot be attributed to vaccination because the decline had started earlier and it has continued even though the proportion of vaccinated subjects in the child population was too small to have influenced the mortality curve. In many of the cities and countries in which diphtherial vaccination has been most extensive, the mortality and morbidity rates have hardly changed. In some localities (Belgium, Copenhagen, Geneva and Montreal) the morbidity has even increased since the introduction of vaccination. In the cities and countries, in which a decrease of the mortality rate has more or less coincided with a campaign for vaccination (the United States, Canada, England, Scotland and France), the downward curve has been as noticeable in nonvaccinated adults as in vaccinated children. Vaccination seems to have influenced neither the mortality nor the morbidity rates of diphtheria. This would seem to prove its inefficacy, since it would be better to refer to mortality statistics than to those of morbidity in order to judge the value of a vaccine.

Schweizerische medizinische Wochenschrift, Basel

79:353-372 (April 23) 1949. **Partial Index**

*Treatment of Tuberculosis with PAS (Paraaminosalicylic Acid), with Particular Consideration of Bronchial and Renal Tuberculosis. R. Hug, S. Moeschlin and E. Tanner.—p. 353.
Diagnosis, Symptoms and Operative Therapy of Pheochromocytoma; Histamine Test and Dibenamine. O. Spühler, H. Walther and W. Brunner.—p. 357.
*Remarks on Dehiscence of Abdominal Wounds. A. Mayer.—p. 361.
Irreversibility of Certain Hereditary Manifestations. U. Pfändler. —p. 363.

Paraaminosalicylic Acid in Tuberculosis.—Hug and co-workers treated 5 patients, 3 men and 2 women between the ages of 20 and 43, with ulcerating tracheobronchial tuberculosis with paraaminosalicylic acid by mouth. The drug was given in tablets, 12 to 15 Gm. per day for four days and then again after an interval of four days. The total dose varied from 230 to 965 Gm. One of 2 patients who had not received any treatment previously recovered, and the other was improved considerably as demonstrated in endoscopic examination. In 1 of 2 additional patients who had been treated previously with streptomycin, resulting only in a partial involution of the ulcerative process, spectacular improvement was obtained with paraaminosalicylic acid; in the second patient a preliminary clinical recovery resulted from treatment with paraaminosalicylic acid. The fifth patient had a severe recurrence of ulcerating bronchial tuberculosis after streptomycin therapy had been discontinued; recovery resulted from treatment with paraaminosalicylic acid. Paraaminosalicylic acid is indicated in cases in which a cure of the specific ulcerous process of the mucous membranes in the tracheobronchial system cannot be obtained with streptomycin. Two men aged 25 and 26 with tuberculosis of the kidney were treated with paraaminosalicylic acid. The effect of the drug on the tuberculous process in the kidneys was questionable, but the accompanying tuberculosis of the urinary passages was favorably influenced. Recent tuberculous lesions in the urinary bladder heal more rapidly, while older lesions react less favorably. Favorable results obtained previously with paraaminosalicylic acid in cases of pulmonary tuberculosis were corroborated.

Dehiscence of Abdominal Wounds.—Mayer reports 18 cases of dehiscence of abdominal wounds in women. Dehiscence is not a local occurrence of the wound area but the local expression of general damage inflicted on the organism. The dehiscence was complete in 8 patients and partial in 10. There was no suppuration. In 15 of the 18 cases the peritoneum separated, allowing prolapse of the intestines in 9 cases, prolapse of intestines and of the omentum in 2 and of the omentum in 1. Eleven patients recovered, and 7 died. The cause of dehiscence is not known. The kind of sutures and the method employed do not play a decisive part. The incidence of dehiscence of abdominal wounds has increased considerably during the war and the postwar years. It is not known whether quantitative or qualitative undernourishment or vitamin deficiency was responsible. Dehiscence of abdominal wounds is a severe postoperative complication, the high mortality rate of which may be reduced in the future by early administration of penicillin.

Book Notices

Clinical Toxicology. By Clinton H. Thienes, M.D., Ph.D., Professor of Pharmacology and Head of the Department of Pharmacology and Toxicology, School of Medicine, University of Southern California, Los Angeles, and Thomas J. Haley, Ph.D. Second edition. Fabrikoid. Price, $4.75. Pp. 373, with 9 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1948.

The authors in the second edition deviate little in their original intent, namely, a book useful both as a guide to the general practitioner and as a text in the classroom. Intimate details are avoided in the discussion of the pharmacy, chemistry or general pharmacology of the drugs capable of acting as poisons. This edition groups and discusses the poisons according to the mechanism of action or the chief presenting symptom instead of following the usual chemical or alphabetic classification. That system may be more satisfactory to the student and physician but restricts the discussion of a poison from several considerations.

About three fourths of the book discusses the toxicology of poisons, diagnosis and treatment in a fairly adequate manner. The book has been somewhat expanded to include chemicals which have been put to increasing use since the last edition, such as the chlorinated solvents of ethane. Still omitted, however, are discussions of the poisonous effects of chlorine, sulfur dioxide, potassium permanganate; yet tenaciously retained are considerations of absinthe and poke root poisoning. The sulfonamide drugs are adequately considered, and space is also devoted to penicillin. The remainder of the book is concerned with symptoms and chemical diagnosis of poisoning, the latter including satisfactory qualitative and quantitative methods for the detection and estimation of certain poisons.

The absence of any appreciable bibliography is noteworthy; however, many of the analytic methods give the original reference. The illustrations are few but pertinent.

This small book is satisfactory in providing a brief text for medical students and clinicians. It includes a surprisingly large amount of material condensed in a highly useful form.

Temperature and Human Life. By C.-E. A. Winslow and L. P. Herrington. Cloth. Price, $3.50. Pp. 272, with 40 illustrations. Princeton University Press, Princeton, N. J., 1949.

The column of mercury in a thermometer is a slender finger of fate influencing mankind's clothing, eating habits, diseases, comfort, available energy and achievements. These influences of temperature on human life form the basis of this publication from the John B. Pierce Laboratory of Hygiene in New Haven, Conn., and represent the winnowed product of sixteen years of investigation since the establishment of the laboratory in 1933. Chiefly, this publication is concerned with the production of heat in the body, the avenues of heat loss, the measurement of metabolism with emphasis on "partitional calorimetry," man's adaptation to varying thermal conditions, factors influencing clothing, the purposes of air conditioning, methods for the procurement of air conditioning and an equally engaging section devoted to climate and season in relation to health.

This book has the quality of being both highly technical and highly readable. In a single paragraph reference is made to the influence of Einstein's concept of energy and to Alice in Wonderland's "Red Queen's" cantankerousness. Without fully accepting the conclusions deriving from Ellsworth Huntington's monumental work, the present authors find much to praise. Ultimately, from their total observations, the authors conclude: (1) Extreme heat or cold lead directly to fatalities, and even such temperature variations as occur in the United States may increase general mortality rates to double their normal volume (as demonstrated in the "hot week" of 1934). (2) Minimum mortality rates occur with a daily mean temperature of 60 to 70 F. and with a mean daily relative humidity of 60 to 80 per cent (at a figure perhaps lower than the 80 per cent of Huntington). (3) Industrial production and intellectual and social achievement are also highest in climates and at seasons where such conditions as those previously cited prevail. The general level of such achievement appears to be definitely favored by the stimulus of moderate (but not extreme) variations toward the colder side of the optimum range. (4) The human body displays regular annual rhythms of physiologic activity as displayed by variations in blood chemistry, in endocrine activity and in resistance to poison and to disease, which are little understood but which are perhaps related to the late winter peak of mortality. (5) Seasonal and climatic variations in morbidity from the communicable diseases are particularly significant and always tend to show an increase in intestinal infections under hot conditions and an increase in respiratory infections under cold conditions.

This book might well have been addressed to the industrialist, the physician, the architect, the clothing manufacturer or the epidemiologist. It beckons to intelligent persons everywhere.

Experimental Immunochemistry. By Elvin A. Kabat, Ph.D., Associate Professor of Bacteriology, College of Physicians and Surgeons, Columbia University and the Neurological Institute, New York, and Manfred M. Mayer, Ph.D., Associate Professor of Bacteriology, School of Hygiene and Public Health, The Johns Hopkins University, Baltimore. With a foreword by Michael Heidelberger, Ph.D., Professor of Biochemistry, College of Physicians and Surgeons, Columbia University, New York. Fabrikoid. Price, $8.75. Pp. 567, with 88 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Illinois, 1948.

Immunology has but recently emerged from adolescence into maturity. This emergence has been made possible by the application of precise quantitative methods to the study of antigens and antibodies. These methods involve technics utilized in the biologic sciences, in physics, in physical chemistry and in analytical chemistry. The utilization of these methods has brought about a rapid and vigorous growth in the knowledge concerning the mechanisms of immunity. Many of the quantitative technics employed in immunity have been developed for the most part by Dr. Michael Heidelberger and Dr. Forrest E. Kendall.

Because of the far reaching and fundamental advances that have been recently made in the field of immunochemistry, Kabat and Mayer's book has come forth at the psychological moment when it becomes imperative to assemble under one cover the newer technics and the newer knowledge in the field of immunology.

To give the reader an idea of the wideness of the area of modern immunological science, admirably, skilfully and concisely condensed into one small volume, it is necessary briefly to give the arrangement of the subject material followed by the authors. The book is divided into four main parts. Part I deals with immunological and immunochemical methodology and is subdivided into chapters discussing the following topics: the precipitation reaction, agglutination, complement and complement fixation; anaphylaxis and allergy, and antibodies and their characterization.

Part II is devoted to the applications and uses of quantitative immunochemical methods involving the estimation of antigens, immunochemical criteria of the homogeneity of proteins and of carbohydrates, cross reactions, and the effects of chemical treatment in altering the immunochemical properties of proteins and polysaccharides. Part III is designed to acquaint the student or investigator with the quantitative chemical and physical procedures employed in immunology. Among the chemical technics described are the estimation of nitrogen by the Kjeldahl method, the estimation of amino nitrogen, acetyl groups, carbohydrates and carbohydrate derivatives, such as glucosamine and the uronic acids, the estimation of protein and the estimation of enzyme activity. Among the physical procedures are included electrophoretic analysis, ultracentrifugal analysis, diffusion, viscosity and solubility methods, dialysis, ultrafiltration, ultraviolet absorption spectrums, and optical rotations.

Part IV presents the methods involved in the preparation of biochemical substances that have immunological implications. Directions are given for the purification of antibodies and for the preparation of crystalline hen's egg albumin, crystalline serum albumin, gamma globulin, crystalline oxyhemoglobin, thyroglobulin, Bence-Jones protein, azo proteins, acetyl and malonyl proteins, phosphorylated proteins, phenylureido proteins, carbenzoxy and other acid chloride derivatives of proteins, diphtheria toxin, bovine type antigens, pneumococcic type-specific polysaccharides, d(−) glutamyl polypeptide, and the blood group factors A, B, and O.

The authors are well qualified to write a book on immunochemistry because they themselves are investigators in this

field. Much of the material in part III and in part IV has been taken from their personal experience. They have produced a book which is well organized, simple and clear in language, and lucid in style. The directions for the various procedures are presented briefly and can be readily followed even by a novice in the field. While the book has been designed for the experimentalist, it is by no means devoid of theoretical considerations. Kabat and Mayer's work may well serve as a model for writers of scientific texts.

The book may be used to great advantage in a theoretical and practical course in immunochemistry. It meets the needs of chemists who may not be thoroughly familiar with immunology and the needs of bacteriologists, serologists and immunologists who may not be well acquainted with microchemical technics. The book may be read to advantage by medical scientists of any description and by clinicians desirous of keeping abreast of progress in the medical sciences.

Detailed Atlas of the Head and Neck. By Raymond C. Truex, M.S., Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York, and Carl E. Kellner, Artist, Department of Anatomy, College of Physicians and Surgeons, Columbia University. Oxford Medical Publications. Cloth. Price, $15. Pp. 162, with 136 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1948.

This atlas is composed of four parts: regional anatomy, skeletal structures, frontal sections and transverse sections. Part one consists of dissections of the various regions of the head and neck, which are made by layers from superficial to deep structures. A commendable feature of the anterior neck dissections is the inclusion of the thoracic structures, heart, lungs and great vessels in order to portray continuity of structure. The dissections of the nervous system present several original aspects. The orbital, nasal, pharyngeal and laryngeal dissections are, on the whole, along the usual pattern found in other texts. They are, however, clearly depicted, and two in particular deserve mention. The orbit and infratemporal fossa show the middle ear structures and their relations. Part two demonstrates the bones of the head and neck and presents nothing unusual. Part three is well done, and the sections along with the labeled inserts give to this atlas an uniqueness that is found in none other of its size. The treatment of part four might be confusing were it not for the small figure included for orientation with alternate plates. An excellent opportunity was lost by the authors in not more clearly depicting the deep cervical fascia.

The terminology of the atlas has been completely anglicized, a fact that might be deplored by some; however, this seems to be in keeping with the current terminologic trends and is not a detracting factor. On the whole, this excellent, accurate atlas presents the ultimate in cooperation between an anatomist and an anatomic artist.

Notfallchirurgie: Die Ausführung der dringlichen blutigen Eingriffe. Von Prof. Dr. Adolf Ritter, Direktor des Thurg. Kantonsspitals Münsterlingen. 63. Band, Neue deutsche Chirurgie. Begründet von P. v. Bruns. Herausgegeben von Ferdinand Sauerbruch. Second edition. Cloth. Price, 46 marks. Pp. 514, with 350 illustrations. Ferdinand Enke, Hasenbergsteige 3, Stuttgart, W, 1949.

The second edition of emergency surgery by Adolph Ritter has just appeared "improved and augmented" over the 1940 first edition. According to the author the field of emergency surgery covers not only those conditions which start as emergencies but also what would have been minor surgical conditions had they not been neglected. Thus, to include the entire subject in one volume, it is necessary that certain phases be omitted.

The author has chosen to dwell on the operative technic and to omit the discussion of diagnosis and postoperative treatment. Preoperative treatment—getting the patient in the best possible condition for surgery—is discussed only very briefly. From the point of view of introducing this foreign text into the American market this choice of handling the subject is unfortunate. The American readers have available many excellent texts on operative surgery. The operative procedure for a gastric resection is similar whether the resection is done for a duodenal ulcer which is bleeding or one which is not bleeding. Important in such an instance is: What makes one operation an "emergency" and the other elective? Furthermore, it is even more important to know what can be done to the bleeding patient to bring him to the operating room in the best possible condition. If the reader is looking for this type of information he will be disappointed in the Ritter book. If the reader is interested, however, in how to perform the necessary operation, he will find in the book good, concise descriptions of standard procedures well written and well illustrated.

Handbook of Surgery. By Eric C. Mekie, M.B., Ch.B., F.R.C.S., Professor of Clinical Surgery, King Edward VII College of Medicine, Singapore, and Ian Mackenzie, M.B.E., M.B., Ch.B., First Assistant, Department of Surgery, University of Durham, Durham, England. With a foreword by the late Sir John Fraser, Bart., M.C., M.D., Ch.M., Second edition. Cloth. Price, $6. Pp. 704, with 29 illustrations. Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1949.

This is the second edition of a book popular with medical students in England and particularly in Scotland. As the title indicates, it is a handbook, or compend, based on the lecture notes used by the authors in teaching a course of review preparatory for final examinations. In this comparatively small volume the entire field of surgery is covered briefly, but rather completely and well. Only the salient features of a subject are presented. Sufficient explanatory matter, however, is added so that the subject may be understood and easily remembered. There is nothing original in the presentation. The material is up to date, accurately presented, inclusive in detail and yet sufficiently concise to be appreciated and digested within a reasonable time. The book is recommended to undergraduates, for whom it is intended.

Coronary Artery Disease. By Ernst P. Boas, M.D., Associate Physician, Mount Sinai Hospital, New York City, and Norman F. Boas, M.D. Cloth. Price, $6. Pp. 399, with 88 illustrations. The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1949.

This book opens with a description of the anatomy of the coronary circulation and continues with the embryology of the coronary vessels. The physiology of the coronary circulation comes next and then pathology of the coronary arteries and the resultant cardiac lesions. Coronary artery sclerosis, coronary insufficiency, angina pectoris and coronary occlusion are liberally discussed. Myocardial infarction receives its fair share of attention. Electrocardiography is well represented throughout. The book is a collection of the opinions of most of the authorities on the subject and includes the authors' personal views. Whenever controversial matters arise, and there are many, the authors settle the controversy with their own opinion, with which, of course, everyone will not agree.

Apparently the authors have not been greatly impressed with the V leads of the electrocardiogram. They mention them in a footnote but show no examples. Contrariwise, they have been rather impressed with anticoagulant therapy in myocardial infarction and state that such therapy should begin as soon as the diagnosis is made. They do not mention some of the difficulties, such as the inability of doctors to obtain determinations of prothrombin levels in certain localities.

The authors appear to handle their statistics carelessly in places. They quote to show that cardiac rupture occurs in 9 per cent of cases of myocardial infarction coming to autopsy in a large hospital. Later they state that rupture of the heart is responsible for the death of 9 per cent of the patients who die from myocardial infarction. Obviously, both statements cannot be correct.

In discussing the death rate following myocardial infarction, the authors state that the death rate will vary depending on whether the treatment is carried out in the hospital, the home or in the office. They do not say how it is possible to treat an acute myocardial infarct in the office. Even the advisability of treatment in the home may be questioned. The book was apparently in press before the lithium intoxication from west-sal® (contains 25 per cent lithium chloride, 0.01 per cent potassium iodine and 0.2 per cent citric acid) occurred. The authors recommend "west-sal"® as a salt substitute.

The book is an excellent review of the knowledge of the coronary circulation. It quotes a great number of authorities; nearly everything pertinent to the coronary circulation is mentioned. Probably a book of this type could never please everyone; this book is no exception.

Everyday Psychiatry: Concise, Clinical, Practical. By John D. Campbell, M.D., Psychiatrist to St. Joseph's Infirmary and Crawford W. Long Hospital, Atlanta, Ga. Second edition. Cloth. Price, $6. Pp. 394. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C. 2, 1949.

The second edition of this book has more practical utility for civilian medicine than did the first, which was largely oriented to military problems. Since the book is directed to workers outside the specialty, particularly to general physicians, medical students and social workers, the author does not attempt an all-inclusive coverage of psychiatric problems. He wisely focuses attention on the vast borderlands of psychiatry. He speaks of mental and behavioral aberrations most likely to be encountered in general practice, of those not clearcut or incapacitating enough to occasion hospitalization. The entities with which he deals include mental deficiency, psychopathic personality, psychoneurosis, psychosexual deviations, schizoid and cycloid personalities, involutional pictures and chronic alcoholism. The section on involutional syndromes is new and certainly belongs in a book of this kind. The author points out that the involutional process is one of the most neglected and poorly understood subjects in medicine.

An effective job has been done in integrating the substantial elements of the various schools of psychiatric thought into a practical system. The author recognizes the validity of basic Freudian concepts in medical psychology; at the same time he dissociates himself from those who would make all psychoanalytic interpretations basic and etiologic. He believes that constitutional and physical factors must be recognized also as fundamental to an etiologic attack.

That the constitutional emphasis is not incompatible with affirmative therapeutic goals is well brought out in these pages. The author's approach is broadly eclectic. He provides much helpful information on the diagnosis, evaluation and handling of problems which recurrently confront the general practitioner. The book is scarcely a textbook, since it deals only with the middle segment of psychiatry, and it deals with this in a highly individualistic manner. The author presents a psychiatry which he has found valid in everyday clinical testing. As such, it has much to recommend it.

Diseases of the Liver, Gallbladder and Bile Ducts. By S. S. Lichtman, M.D., F.A.C.P., Assistant Professor of Clinical Medicine, Cornell University Medical College, New York. Second edition. Cloth. Price, $18. Pp. 1135, with 149 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1949.

Great expectations preceded the new edition of this book. The first edition presented a well organized review of our clinical knowledge as well as of the normal and pathologic physiology and morphology of the hepatobiliary diseases. Since 1942, new information has accumulated. The integration of this newly acquired knowledge in the new edition has been accomplished in an admirable fashion. The experiences of the war with acute hepatitis, newly acquired information as to the histopathologic changes of the liver resulting from the widely expanded use of liver biopsy, progress in hepatic tests derived from increased knowledge of hepatic physiology, advances in medical treatment in general and the use of antibiotics specifically and the new surgical technics are all well presented in this second edition. As cannot be avoided in a field with such extensive ramifications as that of the diseases of the liver, not all aspects are given the degree of emphasis which some readers may desire and some of the newer pathophysiologic observations are not as well integrated as others. The second edition can be recommended even more than the first to all who desire authoritative information on the liver and gallbladder.

Submicroscopic Morphology of Protoplasm and Its Derivatives. By A. Frey-Wyssling, Professor of General Botany at the Federal Institute of Technology, Zurich. Translated by Prof. Dr. J. J. Hermans and Miss M. Hollander. Cloth. Price, $6. Pp. 255, with 161 illustrations. Elsevier Publishing Co., Inc., 215 Fourth Ave., New York 3, 1948.

This translation from the second German edition of an exceedingly fine book presents a study of submicroscopic morphology. The author correlates the data available on submicroscopic structure of protoplasm with known chemical structures and phenomena and their inherent physical properties. The methods, technics and instruments used in carrying out such investigations are explained in detail; at the same time the limits of practical use for the methods used are stressed. The text is organized into three sections: fundamentals of submicroscopic morphology, which includes a discussion on the organization of sols, principles of structure of ions, atoms and molecules, structure of gels, and studies in gels; fine structure of the protoplasm, which includes discussions on cytoplasm, nucleus, chloroplasts and erythrocytes, and fine structure of protoplasmic derivatives, such as horny substances, muscle fibers, myelin sheath of the nerves, protein crystalloids and starch granules.

The numerous figures and sketches are well presented, and extensive references to the literature are included.

Army Medical Library Classification. Medicine: Preclinical Sciences Qs-Qz; Medicine and Related Subjects W. Preliminary edition, 1948. Paper. Pp. 479. U. S. Government Printing Office, Washington, D. C., 1949.

Accepted terminology is used in this classification. Synonyms, cross references and symptoms are included. Although designed primarily for large medical libraries, the book may be used to advantage in correlating medical libraries with medical record libraries in small institutions. The scheme of the etiologic section of the "Standard Nomenclature of Diseases and Operations" has been used in the grouping of diseases of specific anatomic structures. This makes it possible to use the disease nomenclature as a guide to the etiologic grouping of books on shelves. Hospital administrators may beneficially consider use of this classification in combining these two libraries.

La vida del enfermo y su interpretación: Anamnesis. Por Mariano J. Barilari y Leonardo Grasso. Pp. 302. Editorial "El Ateneo," Florida 340-Córdoba 2099, Buenos Aires, 1948.

"The Life of the Patient and Its Interpretation" is in two parts, written, respectively, by the two authors.

The first, written by Dr. Barilari, deals with a methodology which is his personal doctrine of a definitive psychosomatic orientation. He appraises all the factors which determine the individual disorder. Utilizing the knowledge of different specialties, the physician must gage the somatic, functional and social elements.

He emphasizes that the clinical picture is not only the aggregation of the somatic and psychic factors but also the integration of both. He called his school "Dynamic Integrated Medicine."

Dr. Barilari is a prominent Argentinian internist who is a member of the Argentina National Academy of Medicine. Dr. Barilari presents the material in a lucid, readable style with copious charts and diagrams.

The graphic expression of the especial individual pathology and its intrapsychic dynamics he calls the "schematic clinic"; in these respects the book is unique in Latin American literature. The authors further offer a method for comprehensive history taking and emphasize the need for lengthy, painstaking evaluation.

The second part, written by Dr. Grasso, is eminently practicable. Its chief object is orientation of the practitioner, by means of a basic questionnaire, of a pure psychosomatic methodology.

Primary Anatomy. By H. A. Cates, M.B., Professor of Anatomy, University of Toronto, Toronto. Cloth. Price, $6. Pp. 478, with 392 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1848.

This practical volume is recommended for use in teaching nurses, physical therapists, occupational therapists and physical educationalists. It is written by one who has been in the field of teaching for many years. The book contains twelve chapters, and the anatomy is written systemically. This treatment presents some problems when the beginner who is without an adequate biologic background is confronted with regional dissections or dissection demonstrations. The chapters on the skeletal, articular, circulatory and nervous systems might seem too long and detailed, but the author is justified as these are important to the type of student for whom the text is intended. By the use of simple sketches and diagrams the author portrays vividly the important points of the various systems. Many of the sketches and diagrams could be more completely labeled.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

COLLAPSE FOLLOWING A BEE STING

To the Editor:—About nine months ago I was called to treat a 32 year old woman who had been stung on the right ankle by a honey bee. When I arrived, about twenty minutes after the sting, she was in acute collapse, cyanotic and unconscious, with low blood pressure, thready pulse and severe laryngeal edema. I gave her epinephrine intravenously, and she regained consciousness after about 0.75 cc. had been injected. She was sent to the hospital and was able to go home the next day. She had had no allergic history until about two years previously, when she started to have increasingly severe reactions from a bee sting. A desensitization course of treatment with mixed bee-yellow jacket venom was started. Because of her extreme sensitivity, the initial dilution was 1:10,000,000. I reached her suggested maintenance dose of 0.5 cc. of 1:10 dilution in January of this year and gave this amount each week for a month. I then lengthened the interval to two weeks and planned to continue this during the summer. During the course of injections she had no untoward reactions except pain and swelling at the injection site. Her husband, who is a bee keeper, brought some bees along with the patient, so that she could be stung in my presence to see whether she was protected. She was stung on the right arm, away from any superficial veins. She had just as severe a reaction as she had last fall. Within a few seconds, I noticed erythema around the site of the sting. She then complained of itching all over her body, and her eyes started to burn. The stinger was immediately removed having been in her skin about thirty seconds. She started to sneeze; asthmatic rales developed throughout her chest, and she felt her throat getting tight. I placed a tourniquet above the sting, injected 0.5 cc. epinephrine beneath the sting and 0.5 cc. epinephrine intramuscularly in the other arm. She continued to get worse; she became cyanotic, her pulse became thready and she was unable to speak. I gave her 0.5 cc. epinephrine intravenously and 1.5 cc. nikethamide (coramine®). She started to improve and was sent to the hospital; where she made an uneventful recovery. I wrote to the laboratory that prepared the vaccine and was told that the serum was probably not specific and that, if a pint of bees were sent to them, a vaccine would be prepared from them which should be adequate. Would you feel that a new desensitization regimen would be protective? In view of the patient's severe reactions, if she received more vaccine would it be advisable to have her stung again in the office or hospital? What is the relative amount of bee venom in 0.5 cc. of a 1:10 dilution compared with that which is received in a sting from a honey bee? I have given the patient epinephrine "ampins," with instructions to inject one immediately if she is stung again and to place a tourniquet above the sting site. Is there anything more which you could suggest?

R. G. Neher, M.D., Shoshone, Idaho.

ANSWER.—Allergy, of the anaphylactic variety, to bee stings is not rare. A common misconception is that the allergen is found only in the venom. On the contrary, as a rule the allergen is widespread in all portions of the bee. Bee venom produces reactions because with it the bee antigen is injected and thus absorbed. In a number of instances the inhalation of some of the powder from dried wings and other parts of the bee has resulted in asthma.

Three possible explanations may be given for the failure of this patient to become protected to bee stings by desensitizing injections. 1. The antigen may not be specific. It may be that in this particular case there is a high degree of specificity which is not represented by the injection mixture. Was the patient tested with the material with which she was given injections? If she were, the diluted material, perhaps 1:100 or 1:1,000, should have been sufficiently potent to give a positive scratch reaction. If no reaction was present with such or higher concentrations, the material was either not specific or not potent. As a general rule, specificity in these cases is not of a high order, the reaction crossing over not only to various types of bees but even to ants.

2. The extract may be specific but lacking in potency. Various reasons may account for the final inactive preparation. This, too, could be determined by the testing suggested previously. The latter is not an unlikely possibility in view of the ease with which a presumed high dose level was achieved in treatment. One must say "presumed" because the information given by the inquirer does not furnish data on which to base the value of 1:10. The manufacturer of the extract is the only one who could clarify this.

3. Insufficient immunity response to an active antigen is another possible reason for the facts cited. Even if the extract is potent, it does not by any means signify that sufficient protection can be induced for the clinical exposure involved. Perhaps it furnishes immunity for one fourth or one half of the antigen injected by the bee, but three fourths or a half or much less may be ample to produce the severe reactions described. If this situation prevails in spite of treatment with potent extracts, nothing further can be done. However, the facts at hand would indicate that the extract was not potent or not specific or an insufficient maximum dose was given.

Concerning the advisability of a planned bee sting under supervision, one could argue on both sides of the question.

Nothing else will take the place of an epinephrine injection. The injection of an antihistamine compound, such as diphenhydramine hydrochloride (benadryl®) or tripelennamine hydrochloride (pyribenzamine®) might follow the epinephrine. Aminophylline given intravenously may be desirable. If exposure is anticipated, the prior oral administration (preferably an hour before exposure) of an antihistamine drug might be helpful.

LYMPHOSARCOMA

To the Editor:—My son, aged 5½, had a lymphosarcoma in the postcervical nodes of his right side, which now has spread to the left side, mediastinum, axillas and both inguinal areas. I have been told by various roentgenologists to withhold roentgen therapy until the nodes are large enough to cause difficulty either in the mediastinum or elsewhere. I wanted to administer roentgen rays before the glands could develop to such proportions. What is your opinion? Is there any other method of treatment? Have the isotopes any value in lymphosarcoma?

William Offenkrantz, M.D., Brooklyn.

ANSWER.—There is a wide divergence of opinion concerning the method of treatment of lymphosarcoma. In young children it is usual to observe the development of a leukemic blood picture sooner or later in the course of the disease. It has been stated that this is likely to occur more rapidly after intensive roentgen therapy. However, it is well recognized that the lymphosarcomas of children are exceptionally radiosensitive, and it is reasonable to apply small doses of roentgen rays to affected areas.

In some cases, spray roentgen therapy has been employed, using as little as 10 to 15 r (measured in air) of 200 kilovolts per treatment. Treatments are given on alternate days, and the blood picture is followed carefully. Usually four or five such treatments can be tolerated, and they often produce a good remission.

This type of lymphosarcoma should be amenable to therapy with ethyl carbamate (urethane). In a 5½ year old child urethane may be given in doses of 0.5 Gm. three times a day. It is best dispensed in a solution, such as syrup of orange. If the white blood cell count falls below about 2,500, it is well to reduce the dose by one-half; but the drug should not be stopped unless serious gastrointestinal disturbances occur. It is important, when one uses urethane, to support the patient's red blood cell count with blood transfusion.

In the case cited urethane therapy probably should be started at once. Unless the lymph nodes are so large as to produce symptoms due to pressure, spray roentgen therapy as described should be used. If the nodes are to be treated locally, the doses should be smaller and the number of treatments fewer than would be used for Hodgkin's disease. Resolution of lymphosarcoma nodes is usually prompt, and this response is the best guide to therapy. Information concerning any satisfactory treatment employing radioisotopes in this type of patient is apparently not available.

SYPHILIS AND PREGNANCY

To the Editor:—A positive Kahn reaction of 128 units was found in a 20 year old girl. She had been married for four to six weeks. The husband's Kahn reaction was negative. There is some reason to believe that the primary infection had occurred eighteen months to two years prior to discovery of the positive Kahn reaction. Although the husband's Kahn reaction was negative and there was no evidence of infection, he was treated with 600,000 units penicillin in oil for ten days. His wife was treated with the same amount of penicillin, and with five injections of 2 cc. of bismuth subsalicylate in oil and ten injections of oxophenarsine hydrochloride, administered over a three week period. She is now between three and four months pregnant, the last menstrual period having occurred one month after the conclusion of treatment. At the end of treatment the Kahn reaction was 64 units. After two months it was 4 units. After four and one-half months, the Kahn reaction is now 16 units. Should she be retreated, and, if so, by what method?

M.D., Kentucky.

ANSWER.—A rise in the quantitative titer from 4 units to 16 units might or might not be indicative of serologic relapse. If the patient were not pregnant, it would be well, before instituting treatment, to check the serologic titer at intervals of two weeks to note whether the rise is sustained or progressive. Since she is pregnant, the safer course probably would be to treat her again with penicillin, 300,000 units daily for ten days, although some physicians prefer a daily dose of 600,000 units.

THEORY OF FOCAL INFECTION

To the Editor:—**What is the present view regarding focal infection?**

M.D., Virginia.

ANSWER.—The role of foci of infection as causes of systemic illness in general is still under discussion. Some authors invoke the work of Frank Billings (*Arch. Int. Med.* **9:** 484, 1912), who described the principle of this pathogenetic mechanism but cautiously limited its clinical application. A critical appraisal after twenty-five years of study (Bierring, W. L.: J. A. M. A. **111:** 1623, 1938) indicates that the removal of focal infections does not cure the diseases attributed to them in significant numbers of patients. The discussion has been hampered by varying definitions of focal infection.

Acording to good evidence and universal experience, microbial infections of many types can spread from a latent and asymptomatic focus to cause general disease if the localizing factors are weakened (Rosenow, E. C.: J. A. M. A. **61:**1947, 1913. Elliot, S. D.: *Proc. Roy. Soc. Med.* **32:** 747, 1939; Freyberg, R. H.: *J. Am. Dent. A.* **33:** 1108, 1946). It is also well established that toxins from an infected nidus may damage remote tissues. Likewise, there is abundant proof that hypersensitivity of certain tissues to focally infecting bacteria occurs, as demonstrated by commonly used skin tests. However, the question as to whether bacterial products disseminated from a focus of infection will cause generalized clinical illness or inflammation in previously sensitized organs cannot be answered for all cases. It should be applied to a given focus in an individual host. Recent work has furnished indirect evidence that bacterial products derived from foci of common infective bacteria, such as beta hemolytic streptococci, may participate in the pathogenesis of rheumatic fever, glomerulonephritis and certain vascular diseases. (Rich, A. R.: *Proc. Inst. Med. Chicago* **15:** 270, 1945. Rantz, L. A.; Boisvert, P. J., and Spink, W. W.: *Arch. Int. Med.* **76:** 131, 1945. Cavelti, P. A.: *Arch. Path.* **44:** 119, 1947.)

Furthermore, it has been proved that recurrences of rheumatic fever can be prevented by the control of hemolytic streptococcic infection with antibiotics, although these agents do not benefit active rheumatic fever (Rosenberg, E. F., and Hensch, P. S.: *M. Clin. North America*, **30:** 489, 1946). The causative role of focal infections in the common allergies has not been demonstrated in satisfactorily controlled studies and there is considerable doubt about their importance in the development and treatment of rheumatoid arthritis (Slocumb, C. H.; Binger, M. W.; Barnes, A. R., and Williams, H. L.: J. A. M. A. **117:** 2161, 1941). For practical purposes it is recommended that foci of infection be treated in chronic diseases if they constitute a likely handicap to the general health and resistance of the patient.

HALITOSIS

To the Editor:—**Many patients without definite pathologic change in the paranasal sinuses or decayed teeth have halitosis. Some of them have a "sour" breath and others a "decayed" odor. Kindly outline the procedure for detecting the source of halitosis. In cases of intractable halitosis, what should be the treatment?**

M.D., New York.

ANSWER.—Halitosis is by derivation "a condition of the breath," but is partly accepted in medicine to mean "foul or offensive breath." Miller lists fourteen distinctive unpleasant odors.

Halitosis may have many causes. Usually the cause can be found; often it can be corrected. Detection of the cause requires a survey of the list of possibilities, an examination of the patient and a decision on the probable source. Correction then depends on removal of the source if feasible or recurrent cleansing and deodorizing.

Foci in the upper and lower parts of the respiratory tract may not be obvious and can include bronchial infection, sinus infection, chronic nasal catarrh (or even atrophic rhinitis), adenoids and chronically diseased tonsils. The tonsils and adenoids may be removed; true infection may be treated in various ways after a differential diagnosis, including trial of an appropriate antibiotic.

The intestinal tract may be a source, with causes ranging from esophageal diverticulum, gastritis, cholecystitis and colitis to faulty fat metabolism. Gastrointestinal allergy is said to be a cause. Each requires its special correction. The excretion in the breath and in the saliva of odors produced by drugs is too obvious a cause to describe in detail. Smoking may contribute to both odor and oral irritation.

The mouth is the most probable source of fetor oris. Dental decay and dentures can be seen and cared for, but less obvious sources may be a low grade infection of the gums and the lingual papillae, the slight necrosis of the mucous membranes, minute collections of food and the numerous oral bacteria between gums and teeth (especially when tartar has gathered) and food in cryptic spaces between certain teeth. Protein can become rather foul in a few hours, and meat fibers are a frequent offender if not removed. Vincent's infection can usually be seen if present. Sluggish salivary secretion may cause oral stagnation.

Cleansing of the mouth should be started by a dentist, with recurrent later check-ups. In the intervals, food should be removed from crevices by brushing, rinsing, floss or picks at least once a day. Infection should be treated as indicated. The tone of the mucous membrane may be improved by use of a dilute mouthwash containing zinc chloride, perhaps preceded by one containing peroxide or perborate.

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RECURRENT HERPETIFORM LESIONS

To the Editor:—**A 41 year old white man, married, with one child, has had recurrent small herpetiform type lesions on the mucous membranes of the gums, tongue, cheeks and palate since 1940. Prior to 1946 he had lived for fifteen years in England. He has been in the United States for three years. Onset of the lesions coincided with the onset of severe bombing in England in 1940. He has been entirely free of the lesions for only three months; this being during 1946 when he returned to England alone, his only separation from his family. The lesions improved while he received weekly injections of calcium gluconate in 1943-1944. Phenobarbital, ½ grain (33 mg.) four times daily, produced improvement for a while. Periods of emotional stress and strain aggravate the condition decidedly. He has no significant history of allergy. Please suggest probable causes and treatment.**

M.D., Ohio.

ANSWER.—The etiologic aspects of recurrent herpetiform lesions are complicated. The primary cause is the virus of herpes simplex, but numerous factors may be present to increase the susceptibility of the subject or tissues to such an infection. Among the contributing factors may be allergy, vitamin B deficiency, mild local trauma, emotional instability and intoxication.

In the present instance the history of psychic trauma is suggestive. The chronicity suggests a constitutional element. The recurrent loss of immunity to the virus is characteristic and is a reason for recurrences. Persons may also have a specific susceptibility, with a low antibody titer to the herpes simplex virus. One can only speculate on the method by which an emotional problem can produce an oral lesion. It has been reported that the lysozyme content of various secretions rises in some persons during mental stress and that these persons are then susceptible to upper and lower intestinal ulceration. The lysozyme is mucolytic and reduces the protection of the mucosa.

This patient might be helped by a neuropsychiatrist. A barbiturate-hyoscine-belladonna mixture might be administered before meals, three times daily. Estrogenic ointment (400 rat units per gram) could be applied to the mucosa at the rate of 1 Gm. per week. An antihistaminic drug could be given a trial. The best method in many hands has been repeated vaccination, every week or ten days, with smallpox vaccine; a series of eight or ten vaccinations is given, even if no "take" occurs, starting during a period of freedom from ulceration. An oral flareup may occur following vaccination, but the ultimate results are usually good.

DOUCHES AFTER INTERCOURSE

To the Editor:—**A patient using the jelly and diaphragm method of contraception explains that she has been instructed to leave the diaphragm in place for five hours after intercourse without any douching. What is the right advice to be given?**

H. Spitzer, M.D., Clarinda, Iowa.

ANSWER.—The basis for asking women to wait several hours after intercourse before taking a douche is the belief that it requires this amount of time for the spermicidal jelly to destroy the fertilizing ability of sperm. If a douche is taken immediately or shortly after coitus, it is possible for some sperm to escape the action of both the jelly and the douche and pregnancy may result. It is safest to ask the patient to overcome the desire to take a douche immediately after intercourse. Perhaps washing the external genitalia with soap and water may suffice to combat the patient's desire to clean herself internally.

HYPERTENSION AND EXTRASYSTOLES

To the Editor:—Pleaes give me the present concensus regarding phlebotomy in hypertension. About six weeks ago I noted that my pulse rate was too rapid (100 to 110) and that there were frequent pauses (extrasystoles I was told). I am 64 and have had arteriosclerosis for years; my blood pressure is 150 to 170 systolic and 100 to 104 diastolic. I have smoked 11 cigaretes with zeus® filter (changed two to three times daily) for years and have drunk about 7 cups of coffee daily. Beliieving the tachycardia may have resulted from coffee, I tapered off rather rapidly, stopping completely after one week and drinking postum. At this time I had a mole removed from my face with procaine hydrochloride anesthesia, and a week later a bicuspid tooth was extracted with the same type of anesthesia. The next day I had a spontaneous epistaxis. Blood poured out of my left nostril and posteriorly into my mouth. I managed to give myself ¼ grain morphine sulfate (about 15 mg.) and called a doctor. An anterior pack was placed at home and a posterior pack at the hospital. After this rather large loss of blood, my blood pressure was 140 systolic and 94 diastolic, and my blood cell count has remained normal. There have been no extrasystoles since the hemorrhage, and my pulse rate remains around 80. I began drinking coffee again soon after the hemorrhage. Not one internist who examined me prior to hemorrhage had any suggestion to make, other than "go on with your activities as usual." I would like to know what effect the removal of about 500 cc. of blood would have if repeated at such times as my pulse rate again becomes rapid and extrasystoles reappear. I am 6 feet (183 cm.) in height and weigh 142 pounds (64 Kg.). M.D., California.

ANSWER.—Modern concepts of hypertensive arterial disease do not include phlebotomy as a therapeutic measure, with the rare exception of those cases in which hypertension is secondary to polycythemia. More commonly hypertension is associated with anemia, and correction of the anemia without other therapy often leads to a reduction of the arterial tension to more nearly normal levels. In the present instance there is no information as to the blood cell count, hemoglobin concentration and the like prior to the hemorrhage. If the blood cell count was "normal" after such extensive loss as is implied, it is possible that this does represent one of those rare instances of polycythemic hypertension. The data presented do not permit of a more precise opinion. There are other possible explanations for the immediate, but not necessarily lasting, improvement; the rest demanded by the hemorrhage or the removal of a focus of infection (it was not stated whether there was a root abscess involved in the dental extraction) are possible factors. The origin and significance of premature systoles are likewise variable, and their temporary disappearance is not necessarily due to the diminished arterial tension.

Arterial hypertension is due to arteriolar constriction or hypertonia with only two exceptions: polycythemia and coarctation of the aorta. In the latter instances the hypertension is limited to the upper extremities, and the pressure in the legs is found to be lower than in the arms. Both these etiologic types are rare. The usual arteriolar spasticity may follow many different causative factors which are not necessarily identical or even similar in different cases of hypertensive disease. Therapeutic effectiveness is predicated largely on discovery and correction of the causative factors in the specific case. A truly thorough diagnostic study to determine the probable cause of this particular instance of hypertension is indicated.

LUMP IN UPPER PART OF THE ABDOMEN

To the Editor:—What is the shortest time for the development of a desmoid tumor after trauma? A patient was thrown against a steering wheel in a car collision, and about two weeks later he noticed a lump in the upper quadrant of his abdomen (region of the right upper rectus muscle). Albert Cohn, M.D., Vallejo, Calif.

ANSWER.—A period of two weeks is extremely brief for the development of a desmoid tumor. Most reported cases have occurred in women during the childbearing period of their lives, and pregnancy has been considered a factor. During nineteen years at the Mayo Clinic, 50 cases of desmoid tumors were recorded. The tumors are slow growing and not classed as malignant. Usually the tumor develops in the rectus muscle below the level of the umbilicus. It has been reported as occurring as late as nine months after delivery. Possibly the "lump in the upper quadrant of the abdomen" in this patient is a hematoma.

OLD DRIED PLASMA

To the Editor:—Is there any practical use for dried plasma which has passed its expiration date? C. T. Speck Jr., M.D., Cleveland, Tenn.

ANSWER.—Experimental work carried out on dried plasma shows that under ordinary conditions of preservation, away from the light, it will keep, practically unchanged, all its essential qualities for at least eight years.

BLOOD PRESSURE IN THE GIRAFFE

To the Editor:—In view of the long passage necessary and the resulting increase of hydrostatic pressure of the blood traveling from the heart to the brain of the giraffe, what would the blood pressure be and how would adequate cerebral blood flow be maintained? If no actual measurements have been carried out, would you give a speculative answer from other available data? M.D., New Jersey.

ANSWER.—Blood pressure data on the giraffe are not available. It is known that the postural pressure-regulating mechanism, which is located in the carotid sinus in most mammals, is at the base of the skull in all cud-chewing animals, whose heads are constantly being raised from the ground to levels above the heart. In the giraffe the head goes from the ground to a height of 17 feet (520 cm.) when it stops drinking water and begins to browse on the trees. It seems likely that the diastolic pressure rises 100 mm. of mercury or more with that change in posture. The venous pressure in the brain must be nearly 150 mm. of mercury when the giraffe is drinking, and arterial pressure must be maintained at about the same level during drinking as when the head is at the level of the heart—presumably a diastolic level of at least 50 to 70 mm. of mercury and must be 150 mm. or more to maintain pressure in the regulating center when the animal is browsing on high branches.

CALCIUM GLUCONATE

To the Editor:—What would be the risk and the required precautions in making daily intravenous injections of 10 cc. calcium gluconate for a period of four months? H. Spitzer, M.D., Clarinda, Iowa.

ANSWER.—The inquirer does not indicate the concentration of the solution of calcium gluconate injected intravenously. This, however, is usually 10 per cent, and 10 cc. of such a preparation injected daily would provide a daily dosage of about 0.09 Gm. of calcium. This amount is not excessive if the solution is injected slowly. The effects of repeatedly injected calcium salts are immediate and only temporary unless one dose is above average and sufficient to prolong elevation of plasma calcium and produce cumulative overdosage. Concentrations of calcium gluconate higher than 10 per cent have been employed intravenously, but are not usually recommended—too rapid intravenous injection of calcium may affect the heart and central nervous system. Calcium should not be injected into digitalized patients. Calcium gluconate is relatively nonirritant, but it may lead to abscess formation when administered intramuscularly in infants and children.

RETINITIS PIGMENTOSA

To the Editor:—Please recommend a place where a patient with retinitis pigmentosa could be successfully treated. The patient is a boy of 20 whose elder brother has been totally blind for two years. Other members of the family have normal eyesight. This patient cannot see any object directly but has to look up, down or sideways. Can anything be done for his eyes? J. M. Jussawalla, M.D., Bombay, India.

ANSWER.—Retinitis pigmentosa is a progressive primary degeneration of the retina which cannot be predictively healed by any form of treatment that has yet been tried. Treatment by vasodilatation, whether induced by drugs or by section of the sympathetic nerves, has not been demonstrated as effective. Reports of improvement in quality as well as quantity of vision by means of injections of hormones are not sufficiently encouraging to warrant a widespread adoption of this method of treatment. Eyes undergoing retinal degeneration should be protected from excessive light and prolonged use. Vision that has been lost by retinal degeneration cannot be restored by any form of treatment.

DIABETIC RETINOPATHY

To the Editor:—What is the most recent therapy for diabetic retinopathy. Are there any hormones of value for this disease? M.D., Louisiana.

ANSWER.—The cause of the retinopathy in diabetes is not known. The duration of the disease seems to be more important than any other factor; 92 per cent of all patients who have diabetes more than fifteen years have vascular degeneration with retinopathy. Effective treatment is essentially prophylactic and must take place early in the disease. Rigid control with diet and insulin is indicated, although at best the process may be only delayed. When the retinopathy is developed, a high protein diet and ascorbic acid may be of value. Rutin therapy may prevent progression without causing any improvement. In an occasional patient with vascular occlusions, anticoagulant therapy may be indicated.